THE IRON AGE

THURSDAY, OCTOBER 3, 1901.

The Advance of Concrete Construction

Concrete Used to the Complete Exclusion of Masonry.

While the use of concrete in substitution for masonry is constantly becoming more prevalent, there has not come to our notice an example where its use is so extensive in the construction of industrial buildings as in the instance of the new car shops which are now being built at Elizabethport, N. J., by the Central Railroad of New Jersey. With a single exception, all the buildings in this plant are being constructed with concrete walls. In the case of three buildings and a large fresh water reservoir concrete is employed in building the roof as well as the walls and foundation. The great machine shop has concrete foundations and brick walls. This is the only building of the group where the brick construction was adhered to.

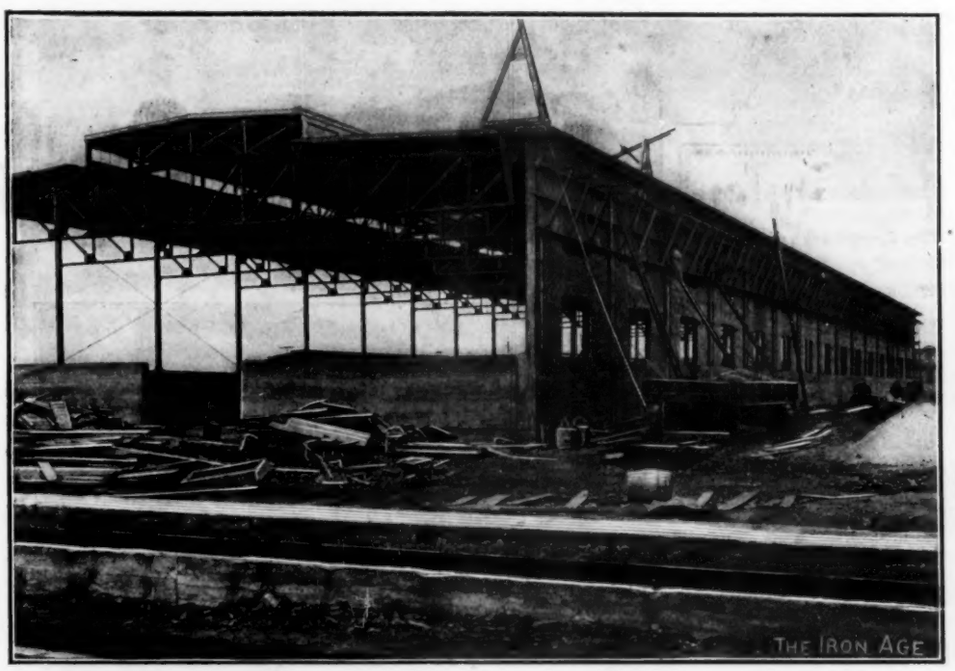


Fig. 1.—Showing Method Employed in Construction of Forge Shop.

THE ADVANCE OF CONCRETE CONSTRUCTION.

Throughout the entire work a series of interesting experiments were instituted. One thing that is strikingly at variance with the ordinary practice in concrete construction is the entire exclusion of trap rock in the mixture. In various portions of the work different mixtures are employed, but they are either of cinder, furnace slag, sand and cement, or gravel, sand and cement. For the foundations and heavy work the latter composition is employed. In some of the walls the cinder mixture is used. In every instance the mixture is approximately four to one. Work on the buildings has been in progress several months, and it is not expected that the buildings now under way will be completed prior to January 1 next.

Probably the most conspicuous portion of this undertaking is the large roundhouse, the walls of which are now approaching completion. This building is of the usual semicircular construction. It is to be 400 feet in diameter. Half of the wall is now ready for the roof; the other half is about up to the windows. This building is being constructed entirely of concrete up to the roof. The roof will be of wood, with an upper surface of tar and gravel. The concrete wall is being built 8 inches in thickness. Owing to the wide spaces between the windows the wall is considered sufficiently safe to stand without bracing, with the exception of the westerly section, which is to be permanently supported by means of timber bracings. In the construction of this building the foundations and wall up to the window line were first finished, being built in the ordinary manner by pouring the concrete into molds built of tongued and grooved pine boards. For the construction of that portion of the structure above the window sills special wooden frames were built. These were just the proper hight to extend to roof line from the finished portion of the wall, and were of sufficient width to allow for the molding of three windows with each set of frames. The window spaces were cut out of each frame. The frames were properly supported so that two stood directly opposite one another, and they stood exactly 8 inches apart. As the concrete was filled in between each pair of frames small strips were nailed along the sides of the window spaces, and thus the intervening spaces were filled in solid with the concrete mixture. The frames then remained for three or four days until the mixture hardened. Then they were removed and shifted to another portion of the wall, where the process was repeated. In this manner half a dozen sets of frames are being made to serve for the construction of the entire wall, with the exception of the west end, where a special frame with extra supports is erected. Fig. 3 shows a portion of the wall of the roundhouse constructed by means of the sectional frames, and a number of the frames are shown lying on the ground, having just been taken from the wall. Fig. 4 shows

the special frame and bracing employed in the erection of the west wall. Here the concrete was hardening at the time the photograph was taken.

The pits in the roundhouse are also being constructed of concrete, and Fig. 2 shows a pair of the wooden molds preparatory to the pouring of the track beds. It will be observed that these molds are resting on solid foundations of concrete. This is about 12 inches thick, are fastened. Directly in front of the roundhouse there is a peculiar little structure which presents the appearance of a solid block of concrete 180 x 70 feet. It is of concrete—walls, roof and all. It will be used as a storage house for oils. One little sunken doorway surrounded by concrete wall is its only opening.

Looking east from the oil house the transfer table, 170 feet wide, runs in a northerly direction for 400 feet.

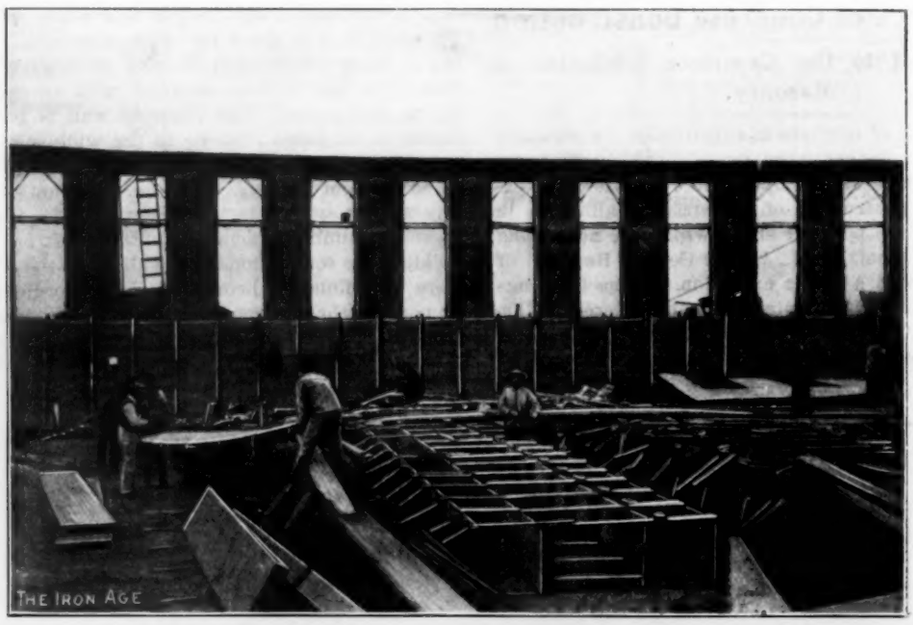


Fig. 2.—Interior of Round House. Wooden Boxes in Foreground are Molds for Concrete Track Beds.

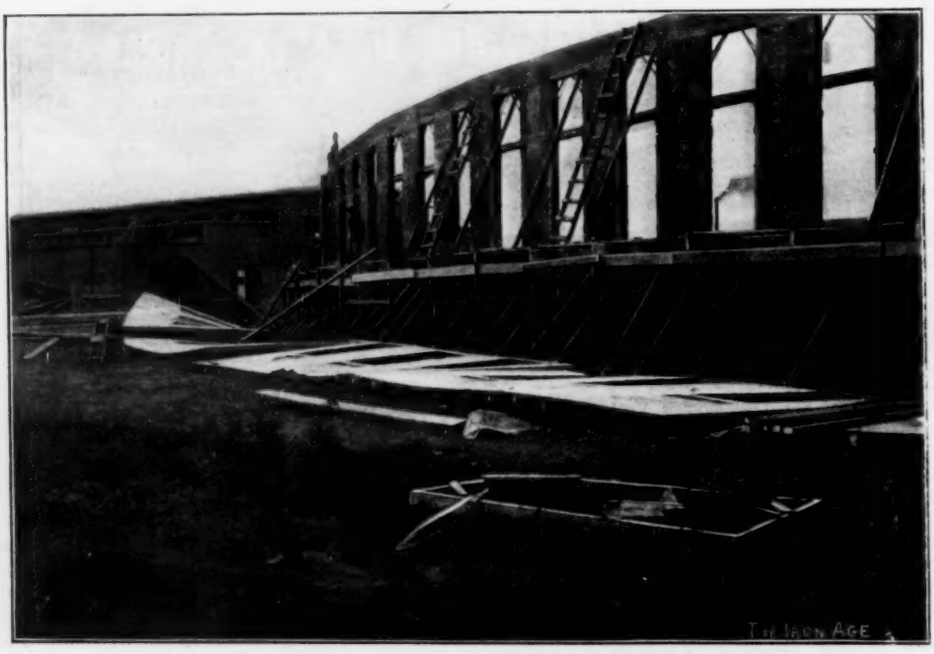


Fig. 3.—Exterior of Round House Walls, Showing Wooden Frames Used in Construction.

THE ADVANCE OF CONCRETE CONSTRUCTION.

and rests on a sheet of expanded metal, which is calculated to aid in obtaining a solid bottom for the foundations. It may here be remarked that this kink is employed in connection with all foundations throughout the plant, as the grade at this point is about even with tide level and water is encountered a few feet below grade. Consequently throughout the entire work the foundations have necessarily been planned wide and flat rather than deep. In pouring the track beds long 1-inch bolts are imbedded vertically in the mixture at proper intervals, and to these the shoes holding the rails

As this is comprised entirely of a series of parallel foundations, it is constructed throughout of concrete. The pits are similar to those in the round house and the same method of construction is employed.

East of the turntable the big machine, erection and boiler shop looms into view. This building is 700 feet long and 160 feet wide. As previously stated, the foundations are of concrete and the walls of brick. The structure is of steel skeleton construction. The foundation is built of a cinder-slag mixture and is 10 feet wide at the base, rising to a hight of 6 feet above grade and tapering

to a width of 2 feet on top. Here commences the 12-inch brick wall. This is surmounted by a roof built of planking and tar and gravel. The foundations for the various machine tools to be installed in this building are also constructed of concrete. There is also a concrete subway running through the entire length of the building, which contains frequent manholes. In this the electric wires, pipes, &c., will be carried, and the manholes allow for entrance to any point, so as to permit inspection or adjustment of the wires at will. From this will be gathered, of course, that the machinery is to be operated electrically.

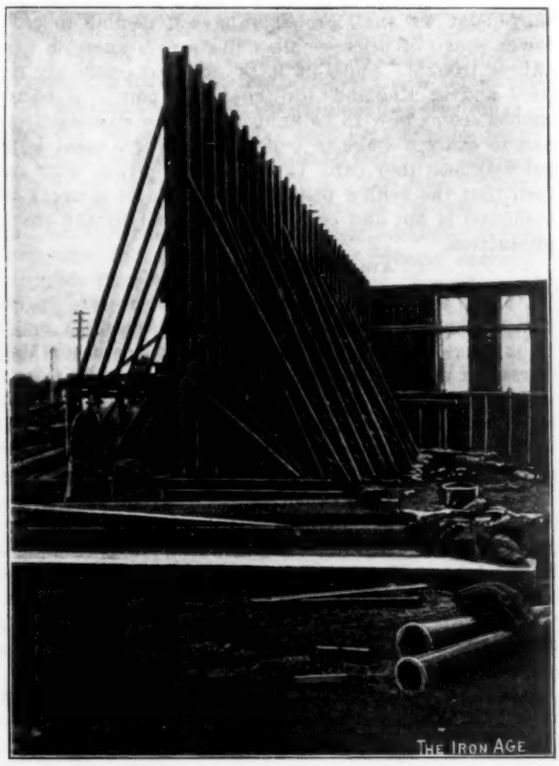


Fig. 4.—Bracing Used in Constructing West Wall of Round House.

In back of the machine shop the forge shop is being erected. This building will be 175 x 300 feet and will be built of concrete around a steel frame to the roof. The roof will be of planking, tar and gravel. The walls are 8 inches thick. This building is illustrated in Fig. 1. This engraving shows the method employed in the construction. The wooden frame, about 6 feet high, will be observed at the top of the side wall. A similar frame is on the reverse side of the wall, and the two are raised simultaneously as the work advances. It will also be noted that the foundations of this building were completed to a hight of 6 feet above grade before the work on the walls was commenced.

The power house, which is represented by Fig. 5, is the only building in the entire group in which any attempt at ornamentation was made. Plain as it is, the favorable appearance of box column effect will be readily appreciated. This is another structure entirely of concrete. Floor, walls and roof are all of the cement composition. The foundations for the boilers and the engine bed are also built of concrete. The building is 175 x 22 feet and attains a hight of 25 feet. Alongside of the power house there is a storage reservoir for retaining rain water drained from all of the buildings and for use in the boilers. It is about 100 feet in diameter and is 15 feet deep, being built almost entirely underground. It is constructed of concrete, the roof included.

The last building of the series is known as the office and storehouse. This structure, too, is constructed solely of concrete, and the walls are of but 4 inches thickness. The building is irregular in shape, a portion being two stories high. It is surrounded by a platform built to the hight of a car floor. The structure is 100 x 300 feet, and at the lowest point 18 feet high above the car platform. The double story portion of the building is 25 feet high above the car platform.

As soon as possible after the construction of these buildings is completed a number of others will be erected. They will include a freight car shop, a passenger car shop and a paint shop. The transfer table will be extended to 800 feet. George Hill of 150 Fifth avenue, New York, is the engineer and architect in charge of the work.

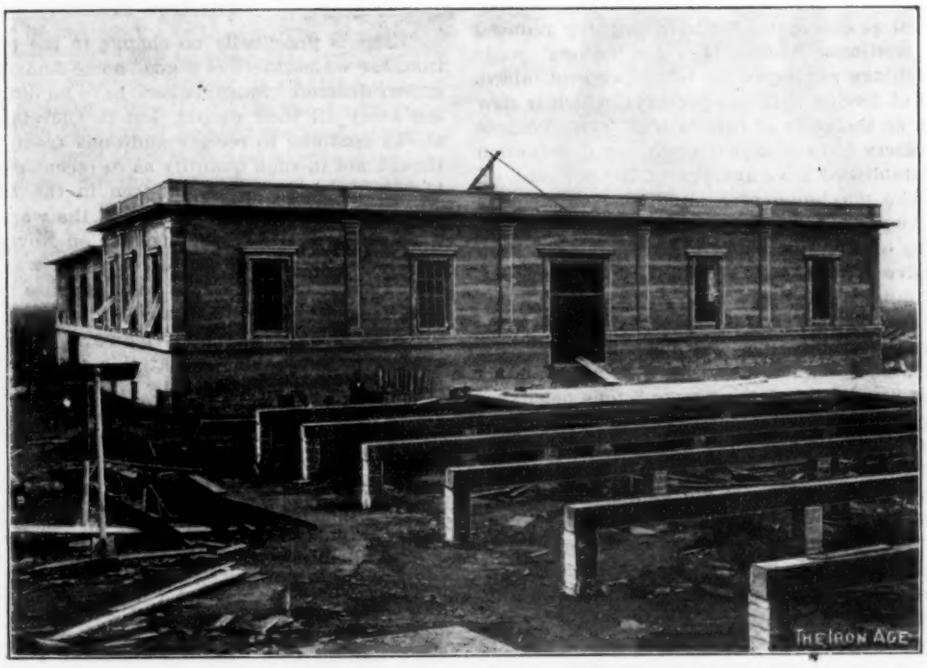


Fig. 5.—The Power House, Built Entirely of Concrete.

THE ADVANCE OF CONCRETE CONSTRUCTION.

A cable dispatch from Liége, Belgium, reports that the miners in the Liége coal basin have resolved upon a general strike.

Notes from Scotland.

GLASGOW, September 19, 1901.—Our iron market does not meet to-day, out of respect to the memory of the late President McKinley. Indeed, business here is generally suspended, for city men have gone to the memorial services instead of to the exchanges. Even the International Exhibition is closed during the funeral hour, and every flag in city and harbor is at half mast. Not since the death of Queen Victoria have there been such genuine expressions of public sorrow, and nowhere more than in this second city of the British Empire is the death of Mr. McKinley more sincerely mourned—both as a man and as the executive head of a kindred nation. Time was when the name of McKinley was not of agreeable sound in the iron and steel circles of this country, for it was associated with a tariff which, rightly or wrongly, was believed to have injured our trade severely. But that is all forgotten now, and the report of Mr. McKinley's speech at Buffalo the day before he was shot was read here with high appreciation of the statesmanlike grasp it displayed of the altered conditions of the times. The murder of the President caused no panic here, as some feared, but it aroused universal grief and it led to something more remarkable than a panic—a general suspension of business while his poor, tortured body was being laid to rest. No more tangible expression of sympathy could be given by a great commercial community.

Wages in the Coal Trade.

At the date of my last letter the industrial situation was more or less disturbed by the wages dispute in the coal trade. As the Conciliation Board was unable to effect a settlement of the question, because the representatives of the men on the board were instructed to vote against the reduction proposed by the employers, it was decided to call in a neutral chairman, who, after hearing the arguments on both sides, should give a final decision. Sheriff Jameson was selected as arbiter, and after prolonged sittings he awarded in favor of an immediate reduction of wages of 6 pence per day, leaving it to the board to determine for how long the reduced rate should continue. This brings the miners' wage down to 6 shillings per day—that is, 50 per cent. above the standard of 1888 (4 shillings per day), which is now always taken as the basis of calculation. The advances which the miners have obtained since the Conciliation Board was established have aggregated 100 per cent. on that basis. The maximum of 8 shillings per day was reached in August of last year, and was maintained until February of this year. Since then there have been three successive reductions, amounting to 50 per cent. in all. The miners, then, are now earning 2 shillings per day less than at this time last year, when, however, large coal was 7 shillings per ton and small coal was 50 per cent. higher than to-day. As a miner's output at the seam is usually taken to average 3 tons per day—though it varies greatly—the labor cost of production has only been reduced 8 pence per ton in the 12 months. Of course surface wages and other costs have been reduced also, but in the aggregate not as much as the reduction in net selling price. This, at least, is what coal owners say, and I see no reason to doubt the statement that many of them are now barely covering costs, and some of them, with thin seams, are actually working at a loss. But the miners and the public, remembering the extravagant prices and the enormous colliery dividends of last year, are slow to perceive or believe this.

Temporary Activity in the Coal Trade.

At the moment there is considerable activity at the collieries, as exporters with time contracts are anxious to get away as much coal as they can while freights are low—and they are very low—and before the period of exemption granted by the Chancellor of the Exchequer from export duty on coal sold before the budget was introduced expires. But although there appears to be a large shipping business doing, our total shipments are getting on to 1,000,000 tons short of the quantity up to this time last year, and the new orders coming in are not of large extent. Not only is there great industrial depression among three of our best customers—Germany, France and Russia—but Continental buyers are holding back in the expectation of lower prices—an expectation which is shared by our home industrial consumers. Thus very little actual contracting is going on, so that when the steam is out of the present shipping movement we shall probably have a decline to a still lower range of prices—unless the wages question again causes trouble. And this is by no means unlikely both here and in England, for the whole policy of miners' unions seems now to be fight against an economic wage and to exact a wage to which coal owners must adjust price as best they can. It is useless to argue with such men that the selling price of an article of general consumption is not and cannot be governed by the cost of production.

American Coal in Italy.

What has made considerable impression in our coal markets is the report of sales of American coal at 17 shillings 6 pence per ton, c.i.f. Genoa or other Mediterranean ports. This is just about the present price of best Welsh steam coal f.o.b. Cardiff. Scotch steam coal is, of course, not so good as Welsh. At present it is obtainable at 10 shillings per ton, f.o.b., and freight hence to Genoa can be obtained at 6 shillings per ton. This is still cheaper than American coal as far as tonnage is concerned. But how does quality compare? Charters have been reported here of steamers to load coal at Philadelphia and other Eastern ports at 10 shillings per ton to Mediterranean ports. This is a very low freight—too low to be continuous, for it must leave a loss on the voyage—but while it lasts a good deal of American coal may be thrown into the heart of Europe. And this is a prospect that our coal owners are facing, although the Welsh coal owners seem rather disposed to close their eyes to it. The report, by the way, that a great combine of Welsh coal owners is in process (as yet unconfirmed) has served to give circulation to a story of combination among Scotch coal owners. There is none, nor is there likely to be one.

The Iron Trade.

There is practically no change in the position of pig iron, for which there is a good home demand, but a slack export demand. Smelters here have no difficulty in moving away all their output, but in Cleveland the public stocks continue to receive additions from time to time, though not in such quantity as in recent months. There is now as much Cleveland iron in the Middlesbrough warrant stores as there was in all the warrant stores of the United Kingdom put together on November 30 last. And hematite is not so scarce as it was last month, although the demand keeps good, because more furnaces have been turned on to that quality. In Scotland more furnaces have been recently blown in, and there are the same number in blast as at this time last year. And we continue to take week by week a large quantity of pigs from Cleveland, besides absorbing without effect on the market what Nova Scotia is sending us—three or four cargoes of 5000 tons each.

There is yet no sign of reappearance of American pig iron in our market, but we hear of it being offered again in the Manchester district, and we hear also of German pig iron being offered at low prices in the Northeast of England—not that it can pay Germans to ship it there, but because they cannot get rid of it at home. Low offers of German finished iron and steel are also keeping down our markets. But for Germany steel ship plates would now be a good deal higher than £6 5s., considering the spurt in shipbuilding. It is a good thing for shipbuilders that this foreign competition has kept prices within moderate range, as they are now doing good business. But there is rather a pause in the demand for new ships, as if ship owners were waiting to see whether material would cheapen again or whether the freight market would improve. Unfortunately the large sales of second-hand British ships to be run at low working charges under foreign flags tend to keep freights down at a low level—at so low a level that it would seem cheaper to lay up a vessel than to run at the rates ob-

tainable. But still that does not prevent large deals in shipping property and large negotiations for new tonnage. The iron molders of Scotland have thought the occasion opportune to demand an advance of wages of 1 farthing per hour on time work and 2½ per cent. on piece work. This is rough on the masters, who have been striving all the year to make ends meet and barely succeeding.

How trying a year this has been to manufacturers was expounded to the shareholders of the Steel Company of Scotland at their annual meeting yesterday. The coal bill, for one thing, has been £21,000 more than last year, and though prices of finished material averaged slightly higher, they only brought in £4000 more. Then the output was 20,000 tons less than in the previous year, in consequence of the shrinkage of demand. What this company, the premier steel manufacturing concern of Scotland, have suffered from most is German, not American, competition. After a heavy and anxious year this large company find themselves with only a trifling surplus of £10,000 to offer to the shareholders. At the present moment, however, steel manufacturers and finished iron makers in Scotland are nearly all as busy as they can be. B. T.

The Eastern Steel Corporation.

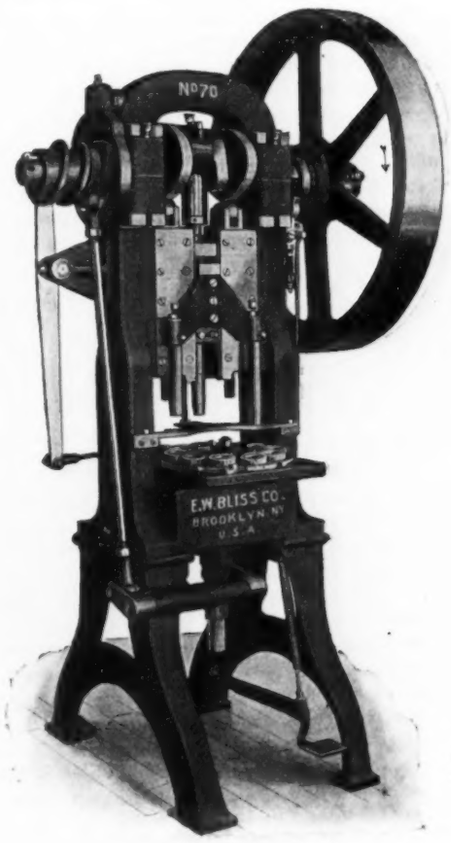
James G. Lindsay & Co., Bullitt Building, Philadelphia, are at the head of a movement to reorganize the old Pottsville Iron & Steel Company, successors of Atkins Bros. of Pottsville, Pa. The company failed in 1894, having been for many years prominent in the structural steel business. The works consist of a blast furnace plant and of a steel works and rolling mill. The steel plant contains two 20-ton open hearth furnaces. The blooming mill is a 34-inch reversing, built by McIntosh & Hemphill Company, Pittsburgh, and having a capacity for 400 tons per day. The rolling mills comprise four finishing trains—one 24-inch, two 19-inch and one 12-inch—with rolls for rolling all sizes of beams and channels from 3-inch to 15-inch, both included, and all the usual sizes of angles, T's and bars. The capacity of these mills is from 300 to 350 tons per day. It is proposed to improve the plant by putting in all the necessary equipments and appliances to enable the works to turn out a maximum tonnage of finished material. It is also contemplated to build plate mills and largely extend the open hearth plant by the addition of at least five 40-ton furnaces.

The Eastern Steel Corporation are to have a capital stock of $2,500,000 and a bond issue of $1,250,000 6 per cent. gold bonds is to be made. The present owners are to turn over the plant, taking therefor bonds to the amount of $541,000 and the entire issue of capital stock. It is proposed to sell $400,000 of the issue of bonds for cash, the owners of the property to transfer a bonus of $400,000 of stock to the subscribers to the bonds. They will transfer also to the company $1,559,000 of stock, retaining $541,000 of stock for themselves. The $1,559,000 of stock and the $309,000 of bonds remaining in the treasury of the company are to be used only in the future by the company to extinguish a balance of $59,000 of an existing 4 per cent. mortgage when due, and to provide additional capital for the extension of the works and improvements in addition to those already contemplated. This treasury stock and bonds will not participate in dividends or draw any interest until sold by the company and the proceeds thereof paid into the treasury of the company for the uses referred to. The improvements at present contemplated are to be paid for out of the $400,000 of bonds now to be sold.

The prospectus is accompanied by a very interesting letter from Pilling & Crane, the well-known iron merchants, of Philadelphia, who discuss the questions as to the supply of pig iron and iron ore for a plant at Pottsville. They summarize the situation in the following words: "The great strength of the Pottsville situation lies in the fact that basic pig will be used as the basis of mixture, and the nearby anthracite coal regions furnish a very large quantity of scrap which forms the balance of the mixture. It should also be borne in mind that Pottsville is close to the Cornwall furnaces, which produce in large quantities the cheapest Bessemer pig iron made in the world and which can always be had at low cost, considerably less than in Pittsburgh, where it is largely used."

The Bliss Reducing Press.

A new type of double action reducing press has been recently designed and built by the E. W. Bliss Company of 11 Adams street, Brooklyn. It is intended for redrawing tin foil bottle caps from the smallest to the largest champagne tops, caster parts, burner shells, and many other articles which have been previously cut and drawn in double action presses, or single action presses in connection with combination dies. By means of an automatic dial feed, operated by a bell crank from the main shaft, the operator can easily place from 50 to 70 first operation shells on the dial plate per minute. As the press is arranged to carry one, two or three reducing punches, from 50 to 210 operations per minute can be performed without loss of time for intermediate handlings. The dial plate is so arranged that the bushings may be easily changed to suit different sizes of shells. To facilitate the rapid action of the press, it is supplied with an automatic knockout for the dies and a positive stripper for the punches. The stroke of the outer slide of the press is 3¾ inches; of the inner slide (or plunger), 7½ inches; both of which strokes have an adjustment of 1½ inches. The press will draw in depth up to 3 inches; there are three openings in the bed, each 4½ inches in diameter, spaced to suit a dial for three operations, as shown in the cut; the width between uprights is 16½ inches; the hight over all is 90 inches.



THE BLISS REDUCING PRESS.

Some large records of production are being made in the finishing mills of the Valley Works of the Republic Iron & Steel Company at Youngstown, Ohio. In one turn recently 175,000 pounds of finished material, consisting of 1¾-inch steel rounds, was made on the 16-inch mill.

The Cementation of Steel and Iron with Gas.*

BY C. W. BILDT.

The characteristic points of this process of cementation are:

1. The cementation is performed at a temperature slightly below that of the melting point of the material bedded in the coal dust.

2. The cementation powder consists of a mixture of charcoal dust and bone dust; about 60 per cent. of the former and 40 per cent. of the latter have given the best practical results. By the addition of bone dust, the cementation powder remains compact during the burning, so that the air is more completely excluded and the carbon more uniformly distributed over the material.

For the cementation process Swedish Lancashire iron and open hearth metal of good quality are used, principally those low in carbon. Either the entire surface of the body or only parts of it may be subjected to cementation. In the latter case the part of the body that is not going to be carbonized must be covered with clay or some other proper refractory. The cemented material need not be remelted; it is a finished product, or is worked out for different purposes.

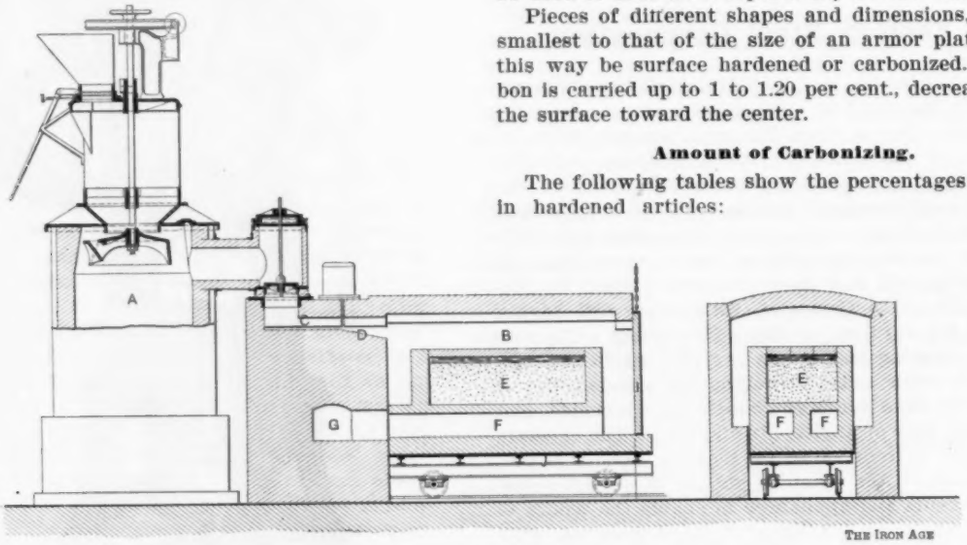


Fig. 1.—Sections of Cementation Furnace.

The drawing, Fig. 1, shows a cementation furnace. It is heated by gas, produced in the gas producer A, then conducted to the furnace B through a flue, C, and ignited by means of a blast above the fire bridge at D. The flame is led above and along the sides of the cementation box E and back through the flues F, beneath the bottom of the box, and out through the chimney flue G.

The box and the inside parts of the furnace must be built of fire brick. The pieces are laid in the box, 50 to 60 millimeters from each other and from the walls, depending upon their size and the grade of carbonizing required. The cementation powder must not be packed, but spread lightly around the pieces, so that it may follow the material when sinking during the course of the process. After the cementation box is filled it is covered with a layer of clay about 50 millimeters deep.

In smaller furnaces the cementation box is covered with bricks placed crosswise. In larger furnaces arched roofs are built over the box, in which case the walls of the box must be connected by braces. The box should also be covered with a layer of bricks placed above the clay layer, as shown by the drawing.

In order to obtain the temperature required—from 1100 to 1200 degrees Celsius—the heating must be continued from 15 hours to a number of days, the time depending upon the size of the furnace. The temperature is measured in a pipe introduced through the box. The process continues until the required grade of carbonization has been obtained. When the material is cemented the furnace door I is opened, the car J taken out and another car ready for cementation is introduced. Thus the operation goes on continually. Larger articles, one end of which is to be cemented, are put through the wall of the cementation box, so that the portion of the piece that is not to be carbonized is outside.

Different designs of furnaces may be used, but a constant heat around the whole cementation box must be produced. To obtain this object the speaker recommends heating by gas.

One gas producer is sufficient to supply with gas one or a series of furnaces of different sizes, ranging from a capacity of a few kilograms up to 10 tons and more. The furnaces may be built on one side of the gas producer or around it, this depending upon the local conditions. There are then special gas flues to each furnace, each one of them having a valve, by which the furnaces can be used or shut off independently of each other.

Pieces of different shapes and dimensions, from the smallest to that of the size of an armor plate, may in this way be surface hardened or carbonized. The carbon is carried up to 1 to 1.20 per cent., decreasing from the surface toward the center.

Amount of Carbonizing.

The following tables show the percentages of carbon in hardened articles:

CEMENTATION OF STEEL AND IRON.

Table of Percentages of Carbon.

I.		II.		III.	
Percentage of carbon.		Percentage of carbon.		Percentage of carbon.	
Depth from the surface in millimeters.	In per cent.	Depth from the surface in millimeters.	In per cent.	Depth from the surface in millimeters.	In per cent.
Surface.	1.00	Surface.	1.00	Surface.	1.00
12	0.70	3	0.92	0.8	1.00
24.5	0.40	6	0.45	1.5	0.80
31	0.27	9	0.20	2.3	0.50
37	0.25	12	0.10	3	0.35
43	0.25	15	0.10	3.8	0.12
..	...	..	...	4.6	0.11
..	...	..	...	5.4	0.10
..	...	..	...	6.2	0.09
..	...	..	...	7.0	0.045
..	...	..	...	7.7	0.040

In this table, No. I shows in percentages the carbon contents of a 445-millimeter armor ingot of open hearth steel with 0.25 per cent. carbon, surface hardened in 288 hours. No. II shows in percentages the carbon contents of a cube with 100 millimeters side, rolled from a 300-millimeter Bessemer ingot, with 0.10 per cent. carbon cemented during 40 hours. No. III shows the carbon percentages of a 25-millimeter bar of Lancashire iron cemented during 30 hours.

The cementation is reckoned from the time when the necessary heat has been reached until the flame has been shut off.

As the result of the high and long continued heat during the process the material has a coarse crystal-

*From a paper delivered before the Society of Swedish Engineers, Stockholm, Sweden, March 27, 1901.

line fracture and is brittle. It must, therefore, be considerably worked to gain necessary strength. Materials that form their shape are not fitted for being worked down, still can with advantage be cemented for certain purposes, as gear wheels, &c., but then they must be properly heated and hardened.

The cemented material may be rolled, forged and machined hot or cold. The proportions of the carbonized and the not carbonized parts of the material are not changed in subsequent working, and that independent of change in shape.

Carbonized round or square merchant iron rolled and drawn to round or flat wire shows that the carbonization follows the surface of the cemented material, and the same is observed when forging it. The speaker showed samples of cemented articles made from material in accordance with the following analyses:

Table II.—Analyses of Material Used for Cementation.

	Sample No.			
	1.	2.	3.	4.
	Per cent.	Per cent.	Per cent.	Per cent.
Carbon	0.040	0.0805	0.080	0.30
Silicon	0.040	0.006	0.012	0.135
Manganese	0.020	0.170	0.380	0.620
Sulphur	0.008	0.024	0.070	0.015
Phosphorus	0.030	0.020	0.120	0.034

No. 1 is Swedish Lancashire iron, No. 2 is basic open hearth steel, No. 3 acid Bessemer and No. 4 acid open hearth. The samples 1, 2, 3 and 4 had been surface hardened as 1¾-inch square bars, then welded and

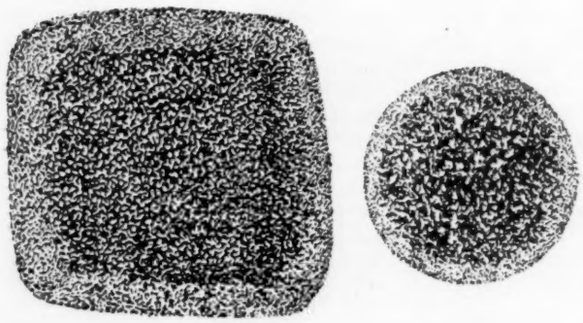


Fig. 2.—Carbonization Follows Surface.

CEMENTATION OF STEEL AND IRON.

rolled to No. 5 wire, and drawn from No. 5 to No. 25 wire; some samples were cold rolled from No. 5 to No. 25 flat wire. The samples were taken after wire drawing and hardened. The fractures of these samples showed that the carbonization follows the surface independent of the change of shape, as shown in Fig. 2.

The speaker also showed several samples forged to different dimensions and hardened; also of cemented material forged to different kinds of tool steels and tested for different purposes at the Atlas Mechanical Works, Stockholm, Sweden, like tools for milling and turning, cutters, drills, &c. Chips were also shown which the tools had cut.

Advantages.

Cemented Lancashire iron, worked down (with smallest percentage of carbon possible) and good quality open hearth metal can be hardened without danger of cracking or warping. A Lancashire iron (containing the smallest percentage of slag) can be cemented without danger of formation of blisters, and it will be superior to open hearth metal in quality on account of its being free from cinder. It is not possible to make open hearth metal with only traces of silicon and manganese so that it is absolutely free from red shortness or cold shortness. Through cementation a steel can be produced of Lancashire iron free from red shortness and cold shortness and not containing more cinder than it contained originally. For metal, cemented but not remelted, the Swedish Lancashire iron will be of much use, especially for making tool steel.

When testing milling and turning tools for working chilled cast iron rolls the Lancashire cementation steel cuts better and the edge holds longer than the English cast steel. Under a high pressure the latter broke while the former cut. The same is true of this tool steel when used for drilling iron, for cutters, planer tools and even razors.

This steel stands higher heat when being hardened, and takes a higher polish than crucible steel, depending upon its being free from cinder. Cemented soft open hearth metal of good quality can with advantage be used for tool steel, though in quality it is not to be compared with the Lancashire cementation steel.

Cemented Lancashire iron and soft open hearth metal of good quality can be used for rolled and drawn wire, cold rolled wire, and different parts of bicycles, like the pins in the chains. The material, of about 75 to 100 millimeters in diameter, is cemented, rolled and drawn; after the ends have been milled off the pins the hardened; the middle surface will be hard, while the ends are soft and may be riveted.

Dies for drawing wire and tubes are carbonized, forged and hardened after being finished.

For plow shares the ingots or materials are carbonized on one side and then rolled to plate, of which the shares are made and hardened in the usual way. These shares, soft on the inside and hard as glass on the outside, stand plowing of every kind of soil. The metal can also be used for locomotive axles, tires for locomotive driving wheels, and for different locomotive parts, like connecting rods and crank pins. The steel is used in wagon axles, sleigh runners, rolls and crushers for stamp mills, rolls for hot and cold rolling, forged iron anvils, propeller blades, different machine parts, &c.

For projectiles, the point of the shot is cemented, whereupon the whole body is forged down or pressed. After the projectile has been turned it is hardened.

Spanish American Notes.

SAN JOSE, C. A., September 12, 1901.—If reciprocity, and therefore a largely increased trade with all these Spanish-American countries, is earnestly desired by our merchants and manufacturers, it must be seen to that all this talk of taking or annexing any of the Latin American republics in whole or in part is stopped once and for all by certain of our public men and by some of our daily journals. We speak glibly of new markets, overproduction and, last but not least, the $600,000,000 which the trade per annum of Latin America is calculated to be worth. We lament that Germany, Great Britain, France and Europe generally get 90 per cent. of this business, leaving the United States a paltry 10 per cent.

How can this be helped and helped at once?

1. As the United States does not mean to "grab" or in any way take what is not clearly her own, let it be so stated in every legitimate manner by our commercial and general press. And, as our Southern neighbors are thoroughly alarmed, let this good news be reiterated time and again.

2. As it is not merely present trade that is aimed at, but the immense increase to come in the near future from the building up of these republics, let our big industries and manufacturers combine to have at least one representative, out and out American house in each of the capitals and principal cities of South and Central America.

It may be objected that there are British, German and French firms in said countries representing American firms and manufacturers, but this is in most cases exactly what we do not want. If necessary I could prove how time and time again low grade iron and steel goods manufactured in Europe are palmed off on the public here as genuine first-class American goods. The absolute truth is that there is scarcely a prominent manufacturer in the United States whose wares are not counterfeited in base metal or low grade stuff by Belgian, German, Austrian and other European makers.

Is it not then perfectly natural that these European firms in Central and South America should underhandedly do all in their power to keep down American trade by palming off "rotten" counterfeits and by mak-

ing the people here believe that our increased army and navy is meant for nothing else than a grand sweep on the canal territories, Venezuela, the mines of Peru and Chile, &c.?

3. Vast sums of European capital are invested throughout Latin America. Our only chance in this direction here is the establishment of an American bank, with exchange directly on New York, Chicago, St. Louis, San Francisco and other important points. One of these banks should be established in Buenos Aires (Argentine Republic), Rio Janeiro (Brazil), Santiago and Valparaiso (Chile), Callao (Peru), Bogota and Panama (Colombia), Caracas (Venezuela), Guayaquil and Quito (Ecuador), San José (Costa Rica), Managua (Nicaragua), Tepicijalpa (Honduras), San Salvador (Salvador), Guatemala City (Guatemala) and Mexico City. Nothing would more quickly bring these business interests to a focus, or make the people of our country know the needs and products, to say nothing of the vast possibilities, of these Southern countries better than the establishment of this means of business intercourse between the nations of America.

C.

Copper on Lake Superior.

DULUTH, MINN., September 28, 1901.—The drop in copper stock prices and the unsettled condition of the market for metal does not appear to have any effect in decreasing development in the lake copper region, or in stopping the rejuvenation and exploitation of mines there.

The latest of the old mines to be taken over by a company who will explore and develop it, if found worth development, is the old Delaware property in Keweenaw County. This has been taken by T. F. Cole, president of the United States Steel Mining Companies, and his associates, and they propose to give it a thorough test. This old mine, though idle for many years, is by no means an abandoned or worthless property. It has had a checkered career. It was originally the Oneida and was opened in 1849, when a large stamp mill was built, and in the succeeding years the largest hoisting machinery in the copper country was installed there. It found much mass copper and its stamp rock showed a saving of 1 1-3 per cent. The expenses were high and the mine failed. In 1861 it was reorganized as the Pennsylvania, and in the few following years more than $200,000 were spent in stamp mills at Lac la Belle, and nearly $2,000,000 more in other work, including tramways, equipments, &c. In 1880 still another stamp mill was built, by a reorganization, a railway and canal were built and another vast sum was spent, but the copper saved was a low percentage. The company have a very large and valuable equipment at the mill and the mine, 114 dwellings, and a mine opened underground in a most lavish and complete manner. Many of the best known copper lodes of Keweenaw County run through the 3700 acres of mineral land owned by the concern.

Another old and long idle mine, the Penn, or Belt, has been taken under option by Pickands, Mather & Co. of Cleveland and is being explored along the old shaft on its amygdaloid lode. The Tecumseh has called an assessment of $2 a share and is said to be in excellent condition. It carries the Calumet and Osceola lodes and the Kearsarge and Pewabic amygdaloids. The Michigan, reorganization of the old Minnesota, has been at work for a year in reopening the lodes known to exist there and in unwatering the Minnesota workings, and is about ready to make an assessment call for purposes of building a mill and additional underground development.

The many new mills that have been under way in the copper country are coming to a point where they are making copper, and the Mass mine is in such shape that it can now make about 200 tons of copper a month. This is the first of the new mines to make copper in its own mill on a large scale. It is installing a second stamp head and expects to be running two by the first of the coming year. The Baltic mill is coming along nicely, and the great Redridge steel dam, which has been under construction for many months at Salmontrout River, Mich., is about ready for use. This dam is expected to impound about 600,000,000 gallons of water and has a watershed of 38 square miles. The water is to be used at the mills of the Atlantic and Baltic Mining companies, who will use not less than 25,000,000 gallons daily. This dam is just above the two mills, which are on the shore of Lake Superior. It is a gravity structure of which the base is a concrete monolith faced with steel and the upper part is inclined steel frames built into the concrete base, to which frames are fastened steel retaining plates curved concave to the water. The entire length of the structure is about 1000 feet, with the steel work 468 feet long. The hight of the steel structure above foundations is 80 feet.

By the coming into line of these various new mills the production of copper from the Lake Superior region will probably increase materially from this time on, unless artificial means of repression are undertaken. Last year there was an actual decrease in the production of copper on the lake, and the year before saw but a trifling increase. The several rich south range mines, the Ontonagon group, Mass, Adventure, Michigan and perhaps Victoria and others; the Mohawk and its vicinity; the Isle Royale, and the new and additional equipment put in some of the large older mines, such as Quincy, within the year, will all have an important effect upon the production of lake copper, which in the present condition of the market is a matter for consideration.

The stocks of lake copper mines have felt the Amalgamated liquidation severely, such a stock as Tamarack dropping to under $300, Calumet to under $700, Baltic Trimountain and Mohawk to about $40, Copper Range to $60, Mass to $26 and so on. These are all among the mines that will be making a profit in copper at much under the present price of the metal, and are either now dividend payers or well on the way to become such.

The water shipment of lake copper during the season of navigation this year has been as follows, compared with the same periods for the past few years:

Years.	Tons.	Years.	Tons.
1901	63,323	1898	87,938
1900	95,518	1897	93,098
1899	80,613	1896	93,221

This certainly does not indicate a free shipment of copper from the lake during the present season, for the rail shipments at this time of year are reduced to a minimum, and nearly everything goes forward by lake. Rail shipments are made during the winter months, and when there is a sharp demand, or appears to be such, they are continued till the very opening of the water route; but at that time they diminish and amount to very little for the summer months. There is claimed to be little copper piled up at upper lake docks and in smelters, but it is quite evident that there must be somewhere about the lake a considerable accumulation at the present time, possibly in course of manufacture or sold and waiting disposition and shipping orders.

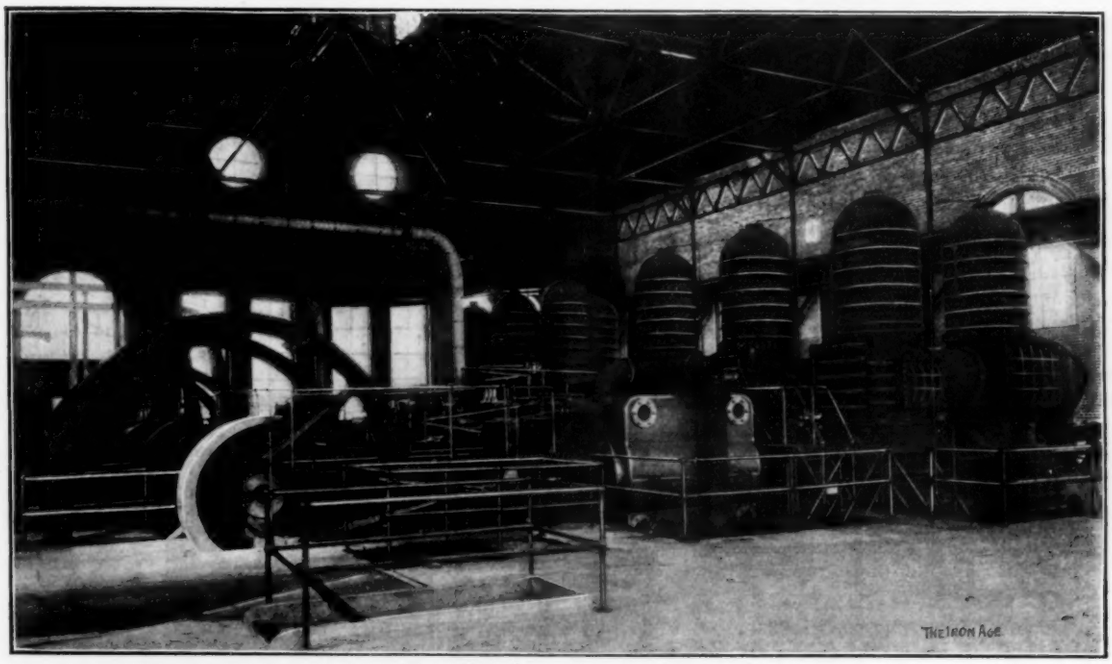
D. E. W.

The McClary Mfg. Company of London, Ontario, who are among the largest producers of enameled ware in Canada, have recently installed what they claim to be the largest drawing press in America. The press, which was manufactured at Goppinger, Germany, weighs 90,000 pounds, and is mounted on a concrete foundation 21 feet square and 8 feet deep, the whole foundation being 12 feet below the surface. The machine is used for drawing into shape the flat metal blanks before receiving the enameling coat. The press will form everything that is manufactured in the enameled ware trade, from a small cup 2½ inches in diameter to a tub 2 feet in diameter, and will draw sheet steel ranging from 25 gauge to 10 gauge, the latter being required for sinks and other heavy articles.

The chain makers in the Pittsburgh district, who have been on a strike for some time, have returned to work. The men formed a union and demanded an advance ranging from 20 to 50 per cent. The demand was refused and the men have accepted an average advance of about 5 per cent.

Pumping Station at the South Works of the Illinois Steel Company.

One of the most extensive pumping stations in the country connected with an industrial works has just been completed at the South Works of the Illinois Steel Company, South Chicago, Ill. These works consist of ten blast furnaces, a Bessemer steel plant and rail mill, an open hearth steel plant and slabbing and plate mills, and have hitherto depended for their water supply upon a pumping station having an extreme capacity of 40,000,000 gallons of water in 24 hours. This is a large quantity of water to be pumped, and would seem sufficient to meet the requirements of almost any industrial plant. The recent addition of two large blast furnaces, however, has so greatly increased the requirements that the old pumping station was seriously inadequate. The works will consume not less than 56,000,000 gallons of water every 24 hours, with both the new blast furnaces in operation. The old pumps represented a gradual growth, and were not sufficiently economical in their operation to permit extension along the old lines. The company, therefore, decided to build an entirely new station on the most approved plan, which will not only secure the utmost efficiency and economy, but will at the same time provide a good margin for such additional requirements as the growth of the works may necessitate in the future.



PUMPING STATION AT THE SOUTH WORKS OF THE ILLINOIS STEEL COMPANY.

The new pumping station is located in the immediate vicinity of a slip opening into Lake Michigan. The water supply is received from this slip through an 8-foot intake. The distance from the nearest end of the building to the slip is about 75 feet. The building covers a ground space of 80 x 144 feet, and is substantially constructed of brick with a steel truss roof, while the foundations for the pumps and the lining of the intake are composed of a most massive construction of concrete, made of blast furnace slag and the Illinois Steel Company's Portland cement. The arrangement of the pumps is shown on the accompanying engravings. In addition to the pumps, the building is equipped with a 25-ton Morgan electric traveling crane. This crane was the first piece of machinery installed, which was done for the purpose of enabling the pumping machinery to be easily and rapidly handled.

The pumping engines are three in number. Two of them are triple expansion horizontal engines built by the Nordberg Mfg. Company of Milwaukee, Wis., of the same pattern as that built by the company for the Tamarack Mining Company, and which has proved so satisfactory. The third pump is intended as supplementary to the two large pumps. It is a Root rotary, direct connected to a McEwen engine built by the Ridgway Mfg. Company. The capacity of each of the Nordberg pumps is 40,000,000 gallons in 24 hours, while the capacity of the Root rotary is 16,000,000 gallons. This arrangement has been made so that whenever it may be necessary to lay off one of the Nordberg pumps the other large pump and the rotary will be able to keep the entire plant supplied with water. Under ordinary circumstances, however, both the large pumps will be kept in operation so as to be able easily to furnish all the water required. They will pump against a stand pipe pressure of about 90 feet.

The Nordberg engines are each guaranteed "to develop a duty of 145,000,000 foot pounds per 1000 pounds of feed water evaporated into dry steam from hot well temperature when pumping at a rate of 40,000,000 gallons per 24 hours." They are equipped with all devices to secure economical steam consumption and efficiency in operation. These engines are of the horizontal direct acting crank and fly wheel type, the steam engine part of which is a Nordberg triple expansion Corliss engine with cranks coupled 120 degrees to a common shaft. The pumps are located back of the steam cylinder with the plungers driven by the extended steam piston rods. The diameters of the steam cylinders are 22, 40 and 60 inches. The diameters of the water plungers are 29 inches. The stroke of the steam pistons and plungers is 52 inches. The piston speed is 300 feet per minute under a boiler pressure of 200 pounds, when the engine is working at its rated capacity.

The valve gear of these engines is of the regular Nordberg-Corliss type. The cut off on the high pressure cylinder is under control of a static regulator, the cut off on the intermediate and low pressure cylinders being regulated by hand. On each cylinder the valve gear is operated from the main shaft by means of one eccentric carrier arm and wrist plate, means being provided to disconnect the valve gear from the eccentric motion, without the use of a hook. The valve stems are of phosphor bronze, the end thrust being taken up by collars in the bonnets. The releasing gear is so designed and constructed as to reduce the reaction on the governor connection to a minimum and to be practically noiseless in action. The vacuum pots are of improved design, containing the least possible number of parts,

having no packing, leakage being necessary to their perfect action, and are mounted on the cylinder feet. Their action is absolutely noiseless. The dash pot plungers are connected to the drop rods by means of an adjustable ball joint, thus insuring freedom of action under all conditions of adjustment. The trip steels are reversible, so that all eight edges can be used as working edges, and are bolted on in such a manner that the bolts holding them can be tightened up while the engine is in motion. All the valve rods, including the one forming the wrist plate connection, are provided with adjustable brass heads.

The cross heads are of very heavy proportions, and made of rubber working on bronze seats. The inlet and discharge openings are 36 inches in each pump.

The frames are of the heavy duty type, containing the main bearing and the slide in one single casting. The girder portion is so proportioned as to have as nearly as possible uniform strength throughout, and is cellular in construction with smooth surfaces on the outside. The flanges on which the cylinder head is centered and the slides are bored in one setting, thus insuring perfect alignment. The frame rests on two pedestals, one the full length of the slide and one under the main bearing. These engines have two fly wheels, each 16 feet in diameter and weighing 20,000 pounds.

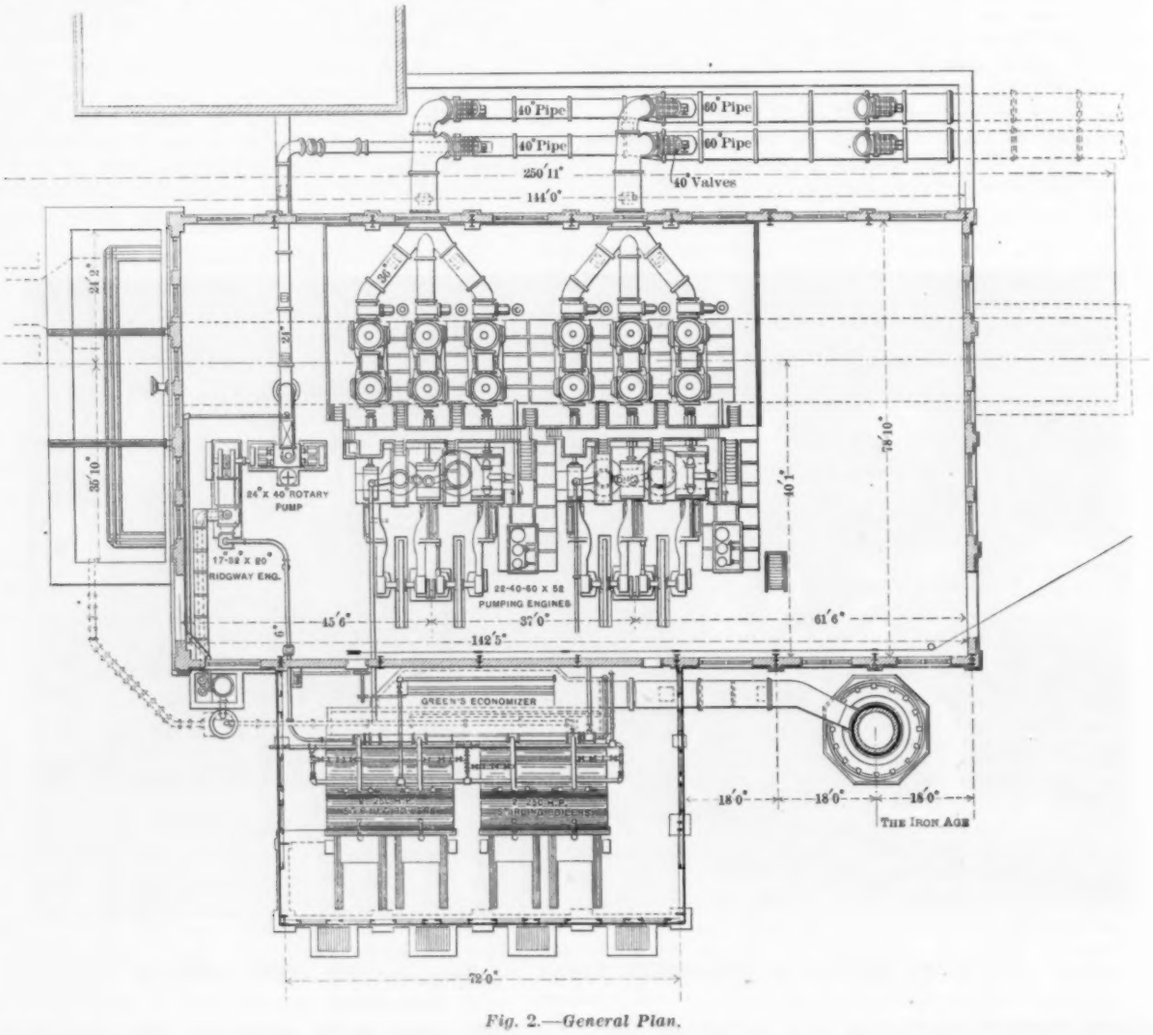


Fig. 2.—General Plan.

PUMPING STATION AT THE SOUTH WORKS OF THE ILLINOIS STEEL COMPANY.

are made of strong cast iron. The pins are of extra length. The shoes are of unusually large dimensions, lined with babbitt metal, hammered in and bored to fit the slides. The connecting rods are of the Nordberg patent solid end type, forged to shape. The crank pin boxes have an adjustment for wear accomplished by means of cylindrical self adjusting wedges, operated by two screws, checking each other. The adjustment is designed to maintain a uniform length of rod.

The pumps are of the horizontal double acting outside packed plunger type. They consist of two cylindrical chambers containing the seats for delivery and suction valves, which are located vertically one above the other. Two pressure air chambers are used, one above each set of delivery valves. The base plate, on which each pump rests, extends over a suction pit directly under the pump. The two pump chambers are connected by removable distance rods located in a plane passing through the center line of the engine and the delivery valve connection immediately above. The chamber nearest the steam cylinder is connected to it by similar removable distance rods, making the engine self contained. The valves are

The condensing apparatus consists of a large cylindrical condensing chamber to which the injection water is admitted just above the steam to be condensed, the water being sprayed into the steam by means of a spray plate. The condenser is served by two vertical single acting air pumps, these pumps and the condensing chamber being arranged tandem to each other and mounted on a base plate, which forms a channel way connecting the condensing chamber with the air pumps. These air pumps are 17 inches in diameter by 19½-inch stroke, and are operated by means of a rock shaft and levers to the connecting rod of the low pressure engine. The jacket drain pump is of the vertical single acting type. It is so constructed that the jacket water cannot reach its stuffing box, the packing being outside and under steam pressure. It has no suction valve, but is filled by gravity, the discharge valve being located immediately below the plunger in such a way as to practically eliminate the clearance.

The pumps are supplied with steam from an independent steam plant built specially for this purpose. The boiler house is 46½ x 72 feet, and contains four

Stirling water tube boilers each of 250 horse-power. These boilers are equipped with the Stirling chain grate for automatic stoking, and will be furnished with coal and ash handling machinery. The boilers are also fitted with the Green fuel economizer. Every care has thus been taken to secure a plant which will be operated economically and furnish a supply of water which will be liberally in excess of the present requirements of the works.

The Sharon Ore Company, at Buhl, Minn., owned by the Sharon Steel Company, are now milling and shipping 800 tons of ore a day, and in a short time it is expected the mines will be producing in the neighborhood

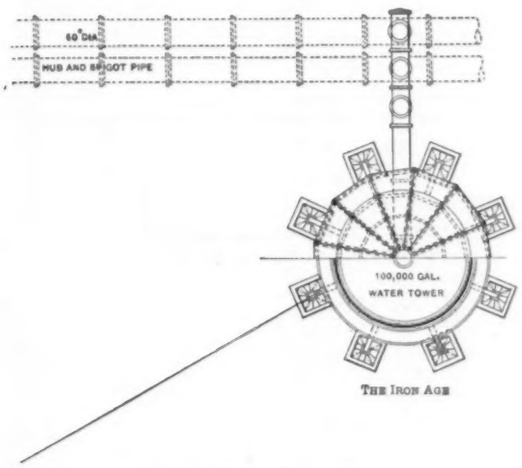


Fig. 3.—End of Plan, Fig. 2.

The Iron Ore Deposits of New South Wales.

MELBOURNE, September 1, 1901.—The Mines Department of New South Wales recently called upon their geological surveyor for a report upon all the deposits of iron ore known to exist "within reasonable distances of those centers which, by reason of their proximity to coal and limestone deposits, might be regarded as suitable for the establishment of iron works." Out of some 200 properties examined, only 16 were regarded by the surveyor, J. B. Jaquet, as meriting detailed description, the rest being dismissed as unworthy the attention of ironmasters, owing to location, poorness of deposit, &c. The largest deposit is at a place known as Cadia, where the ore is estimated at 39,000,000 tons, and where, since fuel and fluxing materials are at hand, it is pretty certain the New South Wales industry will be established, when it is established, for foreign capitalists have fought shy of it for the past 20 years, despite the inducements offered by the Government authorities. This Cadia deposit accounts for the bulk of the ore available for the industry, for, taking it away, the remaining 15 properties only total among them 21,000,000 tons.

The total amount available in New South Wales is thus shown at 60,000,000 tons, and as the output of Lake Superior mines is something like 19,000,000 tons annually, this colony could not stand such a drain for many years.

Against this, however, must be placed the fact that our population is a small one, and, therefore, with a bonus on the manufacture of iron, or some similar form of protection, the deposits are ample for the requirements of these States for many years to come.

Coghlan (our leading statist) estimates our annual requirements of pig iron, based on present necessities,

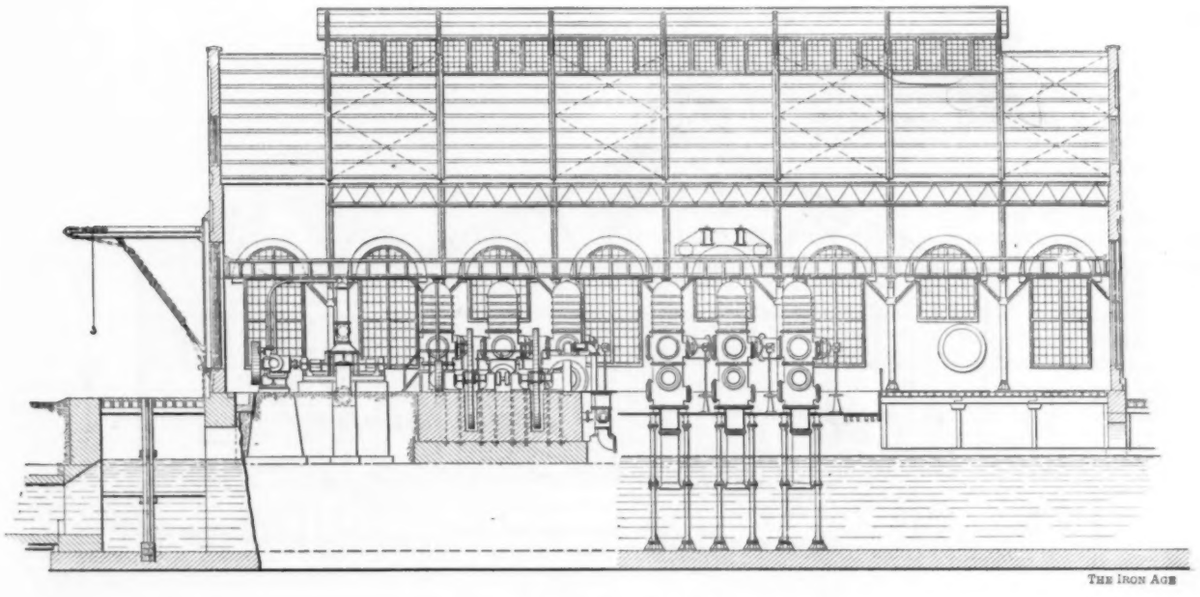


Fig. 4.—Longitudinal Section.

PUMPING STATION AT THE SOUTH WORKS OF THE ILLINOIS STEEL COMPANY.

of 1500 tons daily. The output of the mines during the current season is expected to reach 75,000 tons. The mines of the Sharon Ore Company have been in operation a comparatively short time, but are doing remarkably well under the circumstances. Thorough tests show that the ore is exceptionally good. An ore specialist says that the ore is unquestionably the best on the range. The development of the deposit is continued northward and the last hole drilled disclosed a vein measuring 204 feet in thickness. The impression of experts is that there are at least 30,000,000 tons of ore in the deposit.

at 470,000 tons. Thus, estimating 2½ tons of ore (and some of the deposits are rich) to produce 1 ton of pig iron, 1,000,000 tons of the ore per annum would keep us going, and the New South Wales deposits alone would keep us going for 60 years, provided they were not heavily exploited for other purposes, such as fluxes for smelting works, and that there was no heavy expansion in the demand.

Regarding cost, at Pittsburgh £1 12s. 6d. is given as about the cost of producing 1 ton of Bessemer pig iron; at Middlesbrough, England, £2 12s. 2d.; and Mr. Jaquet compiles figures to prove that the expense to produce

1 ton at Coombing Park, Carcoar, New South Wales, should not be over £2 7s. 7d.

The Cadia and Coombing Park deposits are both in the Orange district of New South Wales. The next leading deposit is at Wingello, 3,000,000 tons; then come the Williams and Karnah River deposits of nearly 2,000,000 tons, titaniferous and hard to smelt. Then come the Chalybeate Springs in the Southern district, of 1,500,000 tons of brown ore, and the remaining deposits are made up of various small ones of under 1,000,000 tons each.

Mr. Jaquet's report, it must be remembered, deals solely with the one State of New South Wales, which must not be confounded with Australia as a whole. If the other States could be induced to present similar reports, a valuable work could be issued which might, by interesting English and American capitalists, lead to this much to be desired establishment of the Australian iron industry.

Victoria, Tasmania, South Australia, alike possess rich deposits, and it needs only a concentration of capital, energy and thought to secure the establishment of the industry on profitable lines, if backed up (and there is little doubt of this) by active Government encouragement.

L. K.

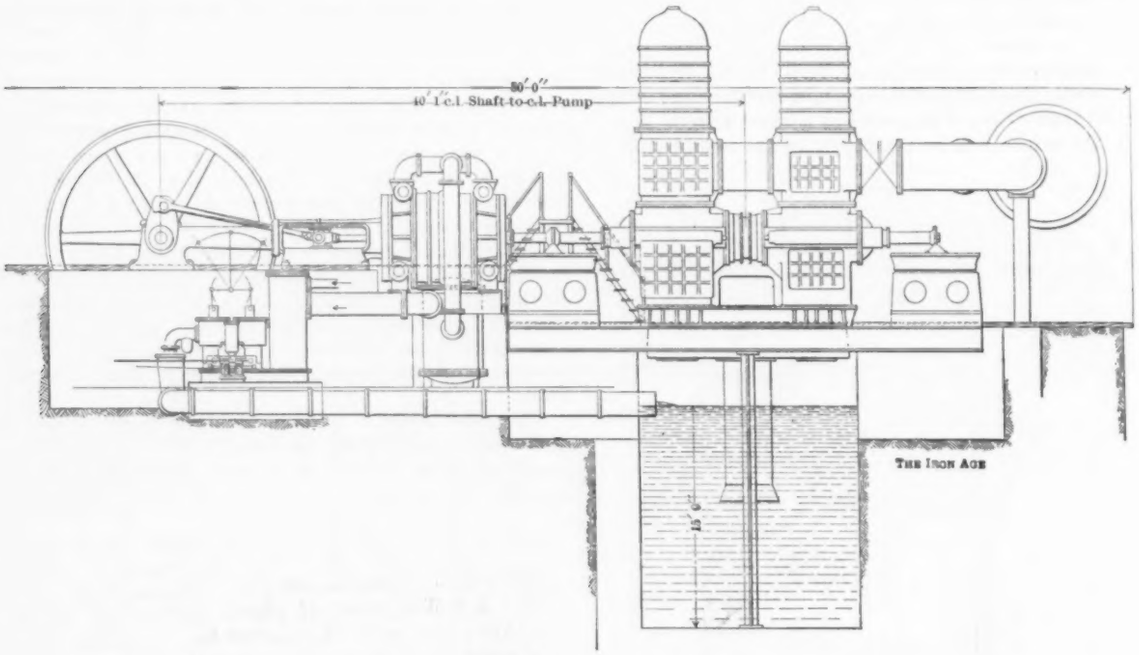


Fig. 5.—Elevation.

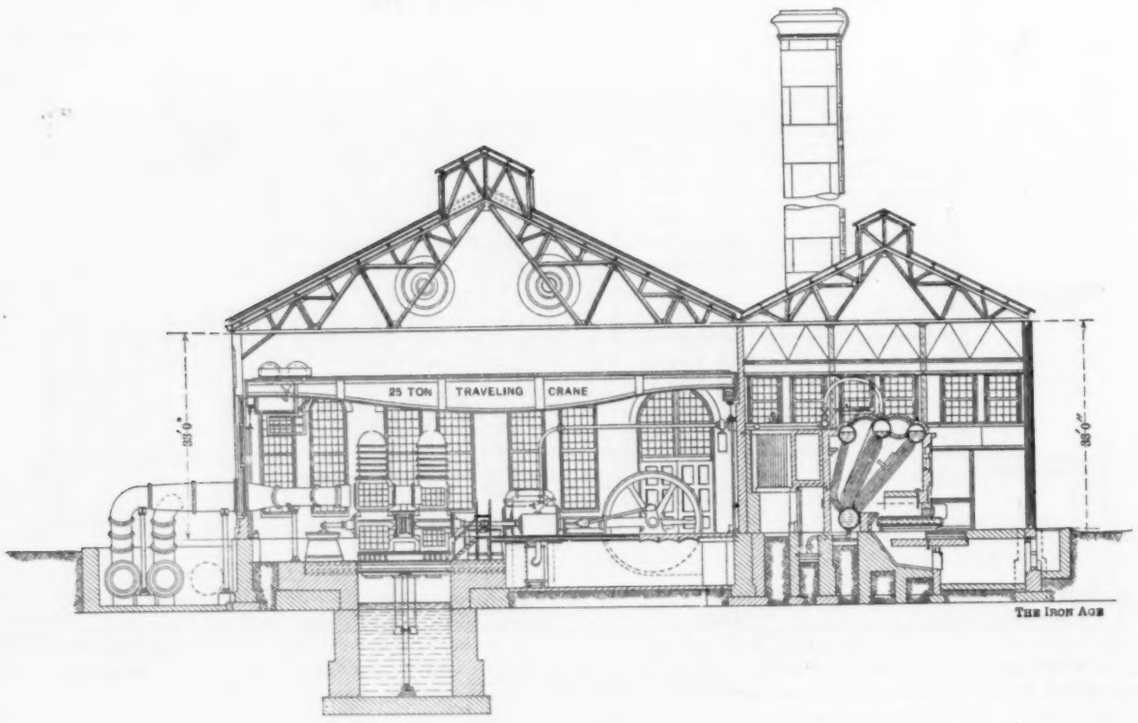


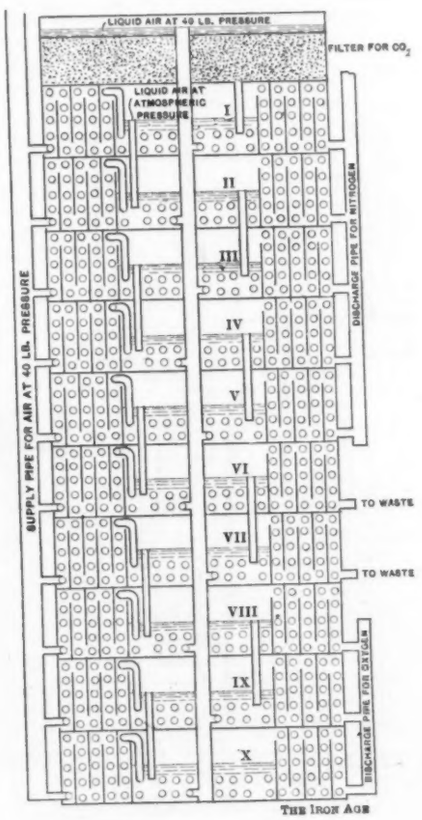
Fig. 6.—Transverse Section.

PUMPING STATION AT THE SOUTH WORKS OF THE ILLINOIS STEEL COMPANY.

The Pressed Steel Car Company of Pittsburgh have received from the Pennsylvania Railroad for use on the main line an order for 2500 steel hopper cars, the order to be filled by the end of the year. Each car will have a carrying capacity of 100,000 pounds. The cars will be built at the Woods Run Works of the Pressed Steel Car Company.

Pictet's Oxygen Separation Process.

M. Raoul Pictet, the well-known Geneva physicist, has recently brought forward a plan for separating oxygen from the air, on a commercial scale, by means of a process of fractional distillation. If liquid air is allowed to evaporate the gas which first comes off is almost pure nitrogen, while after nine-tenths of the liquid has evaporated the remaining tenth is nearly pure oxygen, which can be collected and stored in any suitable receiver. The production of liquid air, in the first place, is, of course, a somewhat expensive operation, but by a system of heat interchanges M. Pictet utilizes the gases evaporating off to lower to the point of liquefaction the fresh supplies of air passed into his apparatus; so that were it possible in practice to make use of perfect conductors of heat for the coils of the interchanger, and of absolute heat insulators to prevent the passage of heat in from the exterior, the apparatus would work indefinitely without any diminution of the original charge of liquid air. In actual practice, however, it is impossible to avoid leakages of heat, and it is therefore necessary to maintain a constant supply of energy to the apparatus sufficient to compensate for the loss of liquid air evaporated by heat flowing in by conduction, or by heat generated by the friction of the moving fluids in the interchanger. This supply of energy is readily afforded by keeping the air in the inlet pipes under a pressure of 30 to 40 pounds per square inch, while the exhaust takes place at atmospheric pressure.



PICTET'S OXYGEN SEPARATION PROCESS.

M. Pictet's plant is represented diagrammatically in the annexed figure. It consists of ten stills, numbered I to X in the diagram. These, it will be seen, are placed in a pile, one above the other. At starting each is filled with liquid air to a level fixed by an overflow pipe, the overflow from each passing through this pipe into the still below. Immersed in the liquid in each still is a coil of piping represented by the series of small circles. Each of these coils opens at one end into a central vertical pipe passing through the whole column of stills into a filter chamber at the top. At the other end each coil is continued by an interchanger coil, forming a series of windings round the central chamber of each still, and terminating at the inlet main shown to the left of the diagram. By means of heat insulating partitions between the successive windings of the interchanger coils the gases evaporated from the liquid in each still flow round these coils as they pass out from the apparatus. An interchange of heat therefore takes place between the fresh supply of air entering the still through the coils and the outgoing gases. By using sufficiently long coils this interchange can be made practically complete, so that on their final escape from the apparatus the gases evaporated are at ordinary atmospheric temperature, while the incoming air on reaching the central chamber of the still has been reduced to a temperature corresponding to the boiling point of the liquid in the still. The latter is, however, at atmospheric pressure, while the incoming air is at a pressure of some 40 pounds per square inch, and accordingly condenses to a liquid. The latent heat set free in these condensations passes out through the walls of the submerged coils and evaporates a corresponding amount of the liquid in the still. The liquefied air passes next from the submerged coil into the vertical pipe, and is delivered into a filter at the top of the apparatus, as already explained. In passing through this filter the solidified carbonic acid gas is strained out and may be collected for bottling. The liquid passing through the filter is delivered into No. 1, the topmost still. Since, however, this still receives the whole amount of the incoming liquid, and only performs one-tenth of the total evaporation, nine-tenths of what it receives passes on to No. 2 still by the overflow pipe, and similarly for the remaining stills of the series. Nitrogen has a boiling point of about —195 degrees C., while oxygen boils at —183 degrees C. This difference of 12 degrees C. at these low temperatures is proportionately as great as one of 40 degrees C. at a temperature of 60 degrees C. Hence, in the top still practically pure nitrogen is alone evaporated, and as a consequence the liquid in this still contains more oxygen than an equivalent weight of common air. A portion of this liquid passes over into No. 2 still, as already explained. In this still, again, next to no oxygen is evaporated, so that the overflow to No. 3 still contains proportionately even less nitrogen than that in No. 1. This holds throughout the series—the liquid as it passes down the column through the overflow containing less and less nitrogen as it approaches the bottom still, the contents of which consists of oxygen to the extent of well over 90 per cent. The distillate from the five uppermost stills is 90 per cent. nitrogen. In that from stills Nos. 6 and 7 the nitrogen is in about the same proportion as in common air, while from the remaining three stills the discharge analyzes 55 per cent. of O. In certain cases it may be convenient to collect separately the distillate from No. 10, since this is over 90 per cent. O; but for many industrial uses the gas obtained by combining the discharge from the three lower stills will serve every purpose.

Certain precautions are needed in the purification of the air before it enters the apparatus, as it is essential that it shall be quite free from moisture, which would deposit as ice and clog the interchanger coils. This moisture M. Pictet extracts by cooling the air well below the freezing point of water by an auxiliary refrigerating plant. The moisture in it can be thus deposited in some readily accessible chamber and the pure dry air passed on to the distilling plant.

The commercial importance of a really cheap method of preparing oxygen on a large scale can hardly be overrated, as it would lead to an enormous saving in fuel, particularly in the case of metallurgical operations. In many of these the desideratum is temperature rather than heat units. The specific heat of nitrogen is high, and as this gas forms three-quarters the weight of ordinary air, the temperature attained in the air furnace is limited and is far below what can be obtained by burning the same fuel in an atmosphere of oxygen. Hitherto the great cost of oxygen has prevented any attempt to replace air by this gas in industrial operations, but M. Pictet hopes that with his new plant the cost may be reduced sufficiently to render the substitution commercially possible. With a plant treating some

500 tons of air per day, he estimates that 110 tons of a distillate containing over 50 per cent. of oxygen could be obtained. At the same time about 0.25 ton of solid CO_2 would be collected, which could readily be increased up to 2 or 3 tons if desired by adding washed furnace gases to the air supply entering the apparatus. At one-third of present prices for liquid CO_2 this by-product would, M. Pictet claims, pay the whole of the expenses of working. Assuming, however, that no market could be found for this product, the cost of 50 per cent. O would, making due allowance for interest on capital, depreciation and the like, not be more than about 1½ pence per 1000 cubic feet; while if 90 per cent. oxygen alone were produced its cost would be 3½ pence per 1000 cubic feet. The power required to run such a plant would amount to a total of nearly 700 horse-power, of which 100 horse-power would be needed for the refrigerator used in dehydrating the air. For metallurgical operations in which the final product is carbon monoxide the plant in question should theoretically suffice to burn 110 tons of coke per day.—*London Engineering.*

The Malleable Iron Fittings Company.

The Malleable Iron Fittings Company, Branford, Conn., have just completed and put in operation a large addition to their galvanizing and tinning department, which more than doubles the capacity of the plant. This is the second addition to that department in the last two years, in which time their custom galvanizing and tinning business has rapidly increased, as well as their output of galvanized malleable iron fittings. Being extensive manufacturers of malleable steel and semi-steel castings, and with a well equipped machine shop in connection with modern galvanizing, tinning, coppering and japanning departments, they are able to make arrangements to furnish castings, either malleable or gray, finished in any way and in any quantity. Their galvanizing department now has a capacity of more than 12 tons daily, and they give special attention to tinning common cast iron, using the well known W. T. Flanders' process, described in "Galvanizing and Tinning," a book published by David Williams Company, 232-238 William street, New York. They have acquired the patterns accumulated by W. T. Flanders in the last 15 years and used by him in building the many plants for galvanizing and tinning which he has undertaken, including those for his labor saving devices for pickling pipe and for preparing cast iron for tinning. They will furnish castings from them and will also furnish plans and estimates to those desiring to erect plants for themselves.

In the current issue of the *World's Work*, Hon. Carroll D. Wright, chief of the Labor Bureau in Washington, discusses the industrial advance in America and gives some striking statistics illustrating the remarkable progress made by this country during the past decade. Mr. Wright says that the number of manufacturing establishments in this country in 1890 was 355,415, while the schedules of the census of 1900 show 653,000 manufacturing establishments in operation last year, making a net gain of nearly 300,000 establishments engaged in the manufacture of goods. The total value of products in 1890 was $9,372,437,283, while a very conservative estimate of the value of all products in 1900 places it as not less than $15,000,000,000. This is a magnificent statistical showing of industrial progress which cannot be paralleled by any country in the world.

The Jamison Coal & Coke Company, Empire Building, Pittsburgh, recently bought about 1000 acres of coal lands in Salem and Hempfield townships. A modern plant consisting of structural steel tipple, shaft, railroad siding, &c., will be erected at once and will employ about 500 men. Almost the entire Pittsburgh seam of coal in the Greensburg basin has been secured by coal companies. The Jamison Coal & Coke Company now hold something over 4500 acres of coal and have two plants in operation.

The Harmet System of Compressing Steel Ingots.

There has been introduced at the steel works of Saint Etienne, France, a system of compressing steel, which, to judge from the fact that patents have been issued to Henri Harmet of Saint Etienne, originates with that engineer. The *Genie Civil* prints a description of the plant, dealing with a 1000-ton press. The object, of course, is to obtain sound ingots without any blow holes, or without the surface cracks due to tension created in cooling. The liquid steel is cast into an ingot mold conical in form, as shown in Fig. 1. The ingot is then forced upward by pressure from below into the mold, the speed of this movement depending upon keeping the liquid

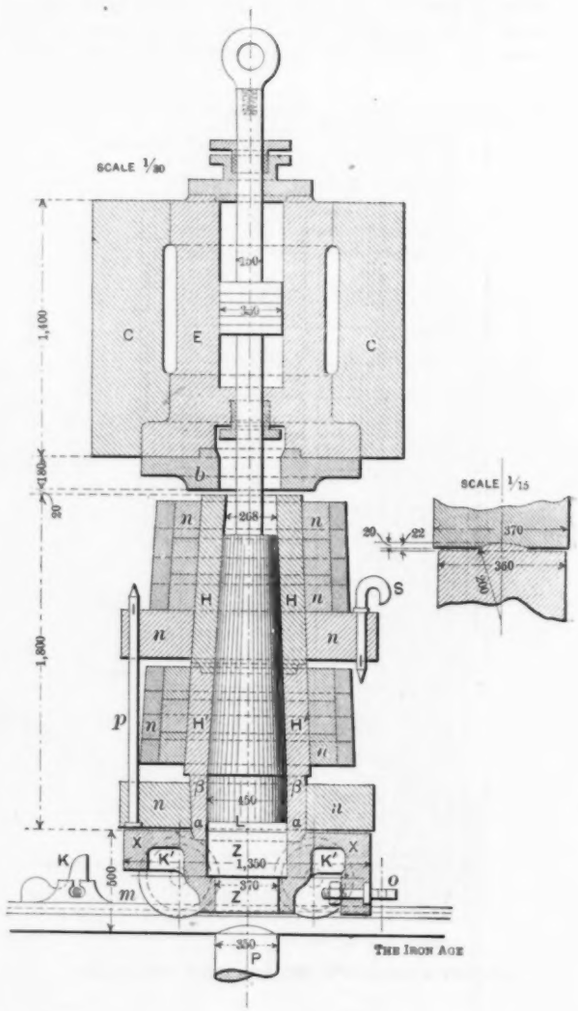


Fig. 1.—Section of Mold.

THE HARMET SYSTEM OF COMPRESSING STEEL INGOTS.

metal from overflowing. The press is of the usual type, as shown in Fig. 2 in section. The ingot mold is conical, as shown, the lower part being cylindrical. A movable bottom, Z, has a diameter slightly smaller than the cylindrical portion of the ingot mold, L being a cast iron washer to protect it from injury. P is the ram of the press, which raises the bottom. A stripper cylinder, E, Fig. 2, is provided to strip the ingot when compressed. The whole mold is mounted on a carrier truck, K' K', Fig. 1. The mold itself consists of one or two parts, as shown in the drawing.

The speed of the upward movement of the piston C, which is naturally variable, must, however, be carefully regulated. It is practically impossible to determine the curve of the values of this speed by calculation, because it is impossible to determine exactly either the temperature of the steel or that of the ingot mold after a specified time. In a general way this curve has been the-

oretically determined, and then the actual compression has been carried out with the plan of approximating it as closely as possible. The first ingots compressed in this manner were cut longitudinally, and the curve has been modified in accordance with the results of this experience. Thus at Saint Etienne five ingots were compressed in order to determine the exact curve which should be followed in order to obtain a sound ingot. After that it is only necessary to follow the same curve for the ingots of like weight to obtain the results desired, since the differences in temperature of casting and the differences in quality and character of the steel do not appear to have

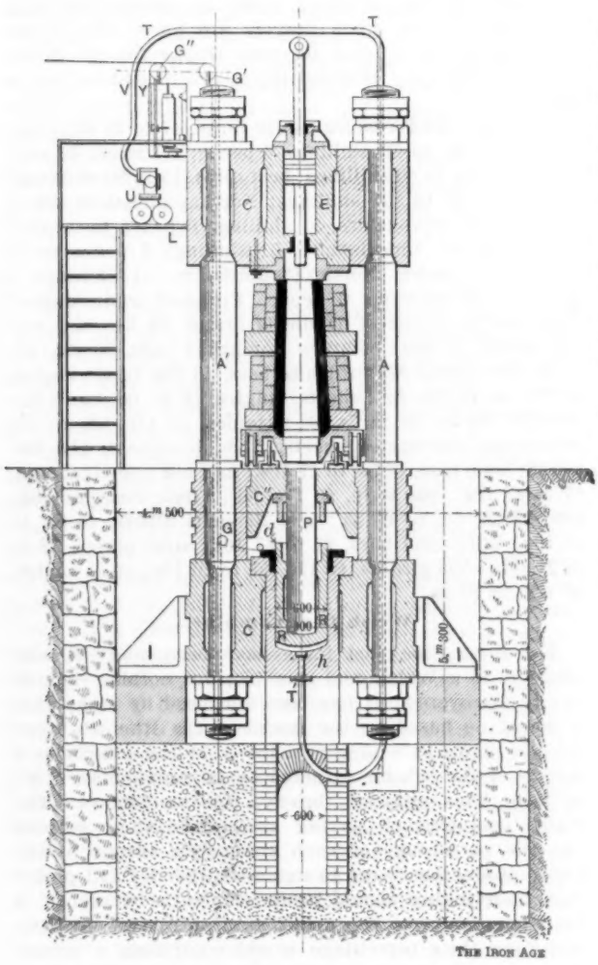


Fig. 2.—The Press.

The Duty on Stubb's Steel Wire.

In a letter to the Collector of Customs at Providence, the acting secretary of the Treasury Department has made the following ruling:

The Department is in receipt of your letter of the 17th inst., further in regard to the proper classification of certain wire known as "Stubb's steel wire," which was the subject of your communication under date of May 20 last. You state that the merchandise in question is imported in lengths of about 36 inches and of "various sizes;" that, so far as you can ascertain, the material is used solely for making drills and small tools where a high grade steel is required, and that such of it "as is not larger than No. 5 Birmingham wire gauge" has been classified by you as round steel wire valued at more than 4 cents per pound and assessed for duty at 40 per cent. ad valorem under paragraph 137 of the tariff act of July 24, 1897. In view of the apparently conflicting decisions involving the dutiable classification of merchandise of the above description, you request a ruling of the Department upon the question.

Paragraph 136 of the existing tariff act expressly provides "that all round iron or steel rods smaller than No. 6 wire gauge shall be classed and dutiable as wire," and as the gauge authorized by the act of March 3, 1893, is confined to the gauging of sheet and plate iron and steel, the gauge applicable to the several classes of wire mentioned in the present tariff act is the Birmingham gauge.

In Treasury decision 21,936, dated January 22, 1900, the Department expressed the opinion that wire similar to the merchandise hereinbefore described was properly dutiable at 45 per cent. ad valorem as clock or watch wire under paragraph 137 of the present act. But in the decision of the Board of United States General Appraisers dated September 4, 1900, it was held that certain "tempered and polished steel rods or bars" about 36 inches in length, smaller than No. 6 wire gauge, which

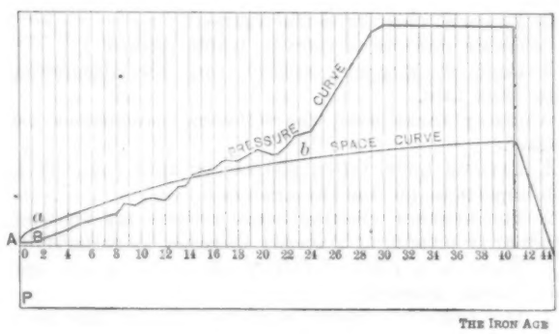


Fig. 3.—Pressure Diagram.

THE HARMET SYSTEM OF COMPRESSING STEEL INGOTS.

any serious influence upon the curve. Each ingot mold therefore appears to have a distinctive curve of its own, one of which, shown in Fig. 3, is that of an ingot weighing 1½ tons. When it is traced on the registering cylinder Y, Fig. 2, the act of compression may be regulated with its aid. In the diagram, Fig. 3, the space P O represents the stroke of the piston before actual compression begins. Up to the point A the pressure compensates for the weight of the bottom plate and of the ingot and from the point A on the compression really begins and the indicator rises rapidly. Finally the amount of work put upon the steel is almost *nil*, and the compression is continued only to avoid the establishment of interior tension. The ingot is stripped as late as possible if it is to be handled cold. When it is to go to the heating furnaces it is stripped hot.

Experience has shown that it is necessary after compressing steel in this manner to cut off a crop of only 4 per cent., the top of the ingot being sound. The steel works at Saint Etienne have put in a plant for handling ingots of 1½ tons weight, but are putting up a series of larger presses.

were imported for use in the manufacture of drills, and known as "Stubb's steel," were dutiable at 40 per cent. ad valorem and three-fourths of 1 cent per pound additional under paragraphs 136, 137, and 141 of said act. Subsequently, however, in the matter of the protest of the Belcher & Loomis Hardware Company against your action in the assessment of duty on similar merchandise imported into your port in accordance with the Department's ruling in Treasury decision 21,936, *supra*, the Board of General Appraisers held in an unpublished decision, dated February 5, 1901, that the article was dutiable at 45 per cent. ad valorem as clock or watch wire valued at more than 4 cents per pound, as assessed. As the merchandise in question and the rods, the classification of which was the subject of the above decisions, are admitted to be identical in character, it follows that the later (unpublished) decision of the Board in effect partially overrules its decision of September 4, 1900—that is to say, so far as the assessment of duty on the article here under consideration is concerned, for it should be observed that the classification of other and different merchandise was one of the subjects of the

earlier decision of the Board just cited—namely, tempered and polished steels rods not smaller than No. 6 wire gauge.

It may be, as you state, that wire of the above description imported at your port is used for making drills and small tools, but the Department is informed that the trade catalogues describe the merchandise as "round, polished steel wire," suitable for drills, tools, "clocks, watches," &c., and that the article has been thus described and used in England for a period of 25 years. Furthermore, it appears that in mercantile houses supplying the jewelry trade an order for clock or watch wire would be filled by a delivery of merchandise of the character here in question, and that such commercial designation has prevailed for many years.

In view of the foregoing, the Department is of the opinion, and so holds, that such of the steel rods known as "Stubb's steel wire" as are not above No. 5 Birmingham wire gauge, the value of which is in excess of 4 cents per pound, are dutiable at 45 per cent. ad valorem as clock and watch wire, "valued at more than 4 cents per pound," under paragraph 137 of the tariff act of 1897.

Notes from Great Britain.

Office of *The Iron Age*, Hastings House, Norfolk St., Strand, London, W. C. Sept. 19, 1901.

The State of Trade Generally.

Business men are beginning to inquire seriously into the general state of trade. The enormous expenditure on the South African War has seriously crippled many of the domestic industries, while the money market has naturally been affected by the large war loans floated. One writer indicates the conditions prevailing in a succinct form. He takes the generally accredited signs of bad trade and puts them to the test. These signs may be briefly summarized thus:

1. The Board of Trade returns of imports and exports.
2. Bankers' clearing house figures.
3. Goods receipts in railway traffic returns.
4. Bank of England reserve, rate for discounting bills, bank rate.

Applying these tests, the following conclusions are reached:

1. Exports have fallen $50,000,000 this year. It is true imports do not tell the same tale.
2. The bankers' clearing house returns are showing irregularity instead of a steady increase, as formerly.
3. There is a distinct falling off in the goods and heavy traffic generally.
4. The bankers' reserve is higher than it has been for years. The bank rate is 3 per cent., and would undoubtedly be lower only for the war. Three months' bills are discounted at 2¼ per cent., as against 3¾ per cent. this time last year. Business men admit that trade is not so good, but are curiously hopeful of the immediate future. Another adverse symptom is to be found in the annual returns of the world's merchant shipping. From these it will be seen that the British tonnage entered and cleared at United Kingdom ports in 1900 is the lowest since 1896, while the tonnage of foreign ships calling at British ports has increased by over one-third. Thus, notwithstanding the optimism of so many prominent business men, I am inclined personally to take a gloomy view of the near future of British trade.

The Metal Market.

The newly formed Strip Association, to which I have already called attention, has started in by raising the price of gas strip, or skelp, as you call it, from £6 12s. 6d. to £6 17s. 6d. Midland buyers, as those chiefly concerned, think that this increase is real and not nominal, and are purchasing accordingly. A similar advance of 5 shillings is announced in galvanized sheets, the manufacturers of which are at present unusually busy. The settlement of the American strike tends to make everybody cautious. President Schwab's declaration that the trust is prepared to push the sale of its products in Great Britain is carefully noted, but a feeling prevails that the Trust has still some leeway to make up before it can bother the British market. The threat is enough, however, to make the various associations chary in advancing prices. Owing to the continued high price of coke, it is thought that the Unmarked Bar Association may slightly advance unmarked bars. Sellers are booking orders readily at £6 15s., and £7 for special brands. Cheap German steel has been bothering both the northeast and Scottish markets. It has now reached the Midland market, but the present activity of Welsh tin plates (due mainly to the American strike) has tended to maintain both demand and price. Those most concerned about the policy of the American Steel Trust are the makers of billets and sections for constructional purposes. At the moment, however, works are fully occupied. Rolling stock makers are busy, and a further inquiry is to hand for 1000 trucks for the South African railways. Midland prices are quoted to-day as follows:

Pig iron: Staffordshire cinder forge, 47 to 48 shillings; part mine, 50 to 52 shillings 6 pence; all mine, 52 shillings 6 pence to 60 shillings; best ditto, 75 to 80 shillings; cold blast, 95 to 105 shillings; Northamptonshire, 50 to 51 shillings; Derbyshire, 51 shillings 6 pence to 52 shillings 6 pence; Lincolnshire, 51 shillings 7 pence to 52 shillings 7 pence; North Staffordshire, 51 shillings 6 pence to 52 shillings 6 pence. Finished iron: Marked bars, £8 10s.; Earl of Dudley's brand, £9 2s. 6d.; second grade, £7 10s.; common unmarked bars, £6 12s. 6d. to £6 15s.; North Staffordshire bars, £6 15s. to £7; angles, £6 15s. to £6 17s. 6d.; sheets, singles, £8 2s. 6d. to £8 5s.; doubles, £8 5s. to £8 7s. 6d.; trebles, £8 17s. 6d. to £9; galvanized corrugated sheets, f.o.b. Liverpool, £11 15s. to £12; hoop iron, £7 5s. to £7 10s.; nail rod and rivet iron, £7 to £7 10s.; gas strip, £6 17s. 6d.; Steel: Bessemer billets, £5 2s. 6d. to £5 5s.; best Siemens billets, £5 5s. to £5 10s.; mild steel bars, £7 to £7 10s.; steel plates, £8 to £8 2s. 6d.; steel girders, £6 12s. 6d. to £6 15s.; steel angles, £6 10s. to £7 5s.

Welsh Coal Combine.

For some time past there have been many rumors afloat as to a Welsh coal combine, but nothing definite can be discovered. It has been surmised by many that it would be based on the model of the Rhenish-Westphalian plan. It is now probable that the scheme is a revival of the scheme fathered by D. A. Thomas, M.P., in 1896. This proposal, briefly, was as follows: The Welsh coal owners, having ascertained their outputs and the percentage of each company's output to the whole production, were to agree that for a fixed period each undertaking should produce, month by month, a fixed percentage to the month's output. Any company exceeding their percentage would contribute a certain amount on every ton of such excess as liquidated damages toward those producing short of their proportionate output. The penalty suggested was 2 shillings 6 pence. This, it was contended, would prevent underselling without driving up prices to an unjustifiable level. To make the South Wales situation clearer, I may point out that 20 companies produce 80 per cent. of the total output of steam coal. On the other hand, it is stated elsewhere with some show of authority that the actual scheme is to buy the various concerns outright. We shall know definitely in a week or two.

Some Profits.

The Weardale Steel, Coal & Coke Company announce a profit on their year's trading of $980,000, compared with $1,395,000 last year. Sir Christopher Furness, M.P., the chairman, who will be on your side before these words appear in print, had something to say on American competition:

"In regard to economy of production they had heard much in regard to community of interests, but in regard to suggestions to amalgamate the various steel concerns of this coast he could only say the directors had had no such proposal under consideration. What they had had under consideration was the necessity of economy in the cost of production. The Weardale steel, with its blending of local and foreign ores, was famous, but, while they were proud of its quality, the directors had

to look further in the direction of a profitable return for their produce. They had to face American and German competitors, and also the fact that the shipbuilders and other iron workers would buy of necessity in the cheapest market so long as their work was able to pass the tests imposed by Lloyd's. The result had been that they were unable to produce steel which during the past year had left them a profit—in other words, they were not producing the article as cheaply as other makers. They recognized that great changes had been taking place and that America to-day could produce steel cheaper than they could at Tudhoe. That brought him to this point—that they had to decide as to the future whether their decision would be to remove their works to the steel ports, or whether it would mean the remodeling of the works on the most modern lines. They were determined to produce steel as cheaply as any other maker, and to effect this would entail a considerable sum of money."

A dividend of 6 per cent. was paid. The Sheepbridge Coal & Iron Company announce that their net profits on their financial year amount to $1,250.000. This means 20 per cent. dividend.

A New Iron.

Always with an ineradicable skepticism as to the value of any new invention, I cannot help announcing that a new method of extracting iron is publicly proclaimed. The inventor is Enoch Gittings, Jr., of the Wisemore Iron & Steel Company. I quote the words of the statement as it reaches me:

"It is the extraction of a new iron—a subject to which the inventor says he has devoted himself for the last 18 years. A distinctive feature claimed for it is that it is made without puddling, and is absolutely pure. Any description of iron ore can be used, as the pure iron only is extracted and the refuse separated from it. It is claimed that the finished iron is much superior to that of any other class of iron, and has stood greater tensile strain and elongation tests at Lloyd's than any other iron. It is also capable of more reduction of area, is almost as soft as lead, and will do anything that ordinary iron or steel will do, and more, as it has in its constitution all the qualities of both. It is said that the iron is already being brought into practical use by some of the Walsall manufacturers, and that the latter, having satisfied themselves of its value, are willing to pay as much as £20 a ton for it. Nothing is stated as to cost of production, but Mr. Gittings states that he has personally visited America and brought his discovery before the notice of some of the ironmasters there, and that the latter have made big offers to secure the right of manufacture. For the present, however, he prefers to retain his rights as inventor."

A British Steel Combine.

I hear that negotiations are taking place for the amalgamation of the Dowlais and Cyfartha Steel Works. If possible the Ebbw Vale interests will also be included. If these three concerns should finally be amalgamated, the combine will be the largest of its kind in Great Britain. S. G. H.

The Buffalo Forge Company.—The Buffalo Forge Company have been incorporated with a capital stock of $1,000,000, the shareholders being W. F. Wendt, H. W. Wendt and Elizabeth Wendt. The business of the company has outgrown the present plant, which occupies an entire block in Buffalo. No more land being available in the vicinity, it has been decided to seek a new and more favorable location where there will be plenty of space and favorable railroad facilities, and an entirely new plant will be built and equipped. The stock of the new corporation is divided equally between preferred and common. The preferred will bear interest of 6 per cent. annually, the common 6 per cent. more after the dividend on the earnings on the preferred stock is paid. If the dividends reach more than 12 per cent., the remainder will be divided equally between preferred and common stockholders.

The Cuban Tariff.

A Reduction on Certain Classes of Machinery.

WASHINGTON, D. C., October 1, 1901.—The War Department has forwarded to Governor-General Wood for promulgation in Havana, to take effect to-day, October 1, the executive order foreshadowed in these dispatches last week, designed to reduce one-half the duties on sugar making machinery, agricultural machinery and implements, and material for the construction, maintenance and operation of steam or street railroads. The order is drafted so as to continue in force the present duties on the articles referred to unless employed for the purposes specified, when rebates of 50 per cent. of the duty will be allowed under regulations to be prescribed by the collector at Havana with the approval of the military governor, which regulations will specify the character of the proof to be furnished as to the use to which the articles imported are to be put. The text of the executive order is as follows:

By direction of the President it is hereby ordered and directed that Group 2, Class XI, paragraphs numbers 214 to 226 inclusive, and paragraphs numbers 286 and 318 of the "Customs Tariff for Ports in the Island of Cuba," promulgated by Executive order dated March 31, 1900, be modified so as to read as follows:

NOTE I.—For the classification of parts of machinery the following rules must be observed:

1. A separate piece of a machine is understood to be any object which is not expressly specified by name under some heading of the tariff, and which by its shape and by the manner in which it is presented for clearance in the custom house, though not completely finished, may be considered as exclusively destined to a machine and can have no other application. If it be imported completely finished it must pay under one of the headings of the tariff referring to machinery.

2. Tubes, bars, axles, screws, bolts, sheets, plates, boiler bottoms, wire and other articles expressly taxed in the tariff must pay duty accordingly, though they be destined to machinery.

3. Tools, instruments and utensils employed in the arts, agriculture and industry cannot be considered as parts of machinery for the application of duty, and must pay according to the materials of which composed.

214. All weighing machines, including scales and detached parts thereof, per cent. ad valorem..... 20

215. Machinery and apparatus for making sugar and brandy‡§ per cent. ad valorem..... 10

NOTE.—The articles included in paragraph No. 215, which shall be imported within 12 months from the date of the promulgation of this order, shall be entitled to a rebate of 50 per cent. of the duty specified in said paragraph, under such conditions and guarantees as the chief of the customs service, with the approval of the military governor, may direct. This concession is limited exclusively to those articles enumerated in subdivisions (a) and (b) of note § to paragraph No. 215.

216. Agricultural machinery and apparatus ‡**, per cent. ad valorem..... 10

NOTE.—The articles included in paragraph No. 216, which shall be imported within 12 months from the date of the promulgation of this order, shall be entitled to a rebate of 50 per cent. of the duty specified in said paragraph, under such conditions and guarantees as the chief of the customs service, with the approval of the military governor, may direct.

217. Steam motors, stationary, per cent. ad valorem..... 20

218. Marine engines, steam pumps, hydraulic, petroleum, gas and hot or compressed air motors,†† per cent. ad valorem.

219. Boilers††
- a. Of sheet iron, per cent. ad valorem..... 20
- b. Tubular, per cent. ad valorem..... 20

220. Locomotives and traction engines, per cent. ad valorem 20

221. Turn tables, hydraulic cranes and columns, per cent. ad valorem..... 20

222. Machines of copper and its alloys; detached parts of the same metals‡‡, per cent. ad valorem..... 20

223. Dynamo-electric machines; inductors and detached parts, per cent. ad valorem..... 20

224. Sewing machines and detached parts thereof, per cent. ad valorem..... 20

225. Velocipedes, bicycles, and detached parts and accessories thereto, including bicycle lamps, per cent. ad valorem 20

226. Machines and apparatus, other, or of material not specially mentioned, also detached parts of all kinds other than of copper or its alloys,§§ per cent. ad valorem 20

Special Provision.

318. The following articles, when imported direct by a steam or street railroad company of the island of Cuba for the exclusive use of said railroad within 12 calendar months from the promulgation of this order, shall be en-

titled to entry at 5 per cent. duty ad valorem, under such conditions and guarantee as the chief of the customs service may exact or direct:

This concession to railway material is limited exclusively to the following enumerated articles:

Passenger coaches, complete, erected or knocked down. Freight cars, complete, erected or knocked down. Pine wood prepared especially for freight cars. Locomotives and tenders, locomotive boilers and locomotive furnaces, locomotive boiler plates and tubes, locomotive and tender frames and tanks for locomotive tenders. Turntables, transfer bridges, iron or steel bridge work, riveted or rolled, iron or steel rails, points, crossings, signals, gate crossings and metal ties. Trucks for cars, tenders and locomotives, complete and parts thereof, including all the running gear. Splices, fish plates, fish plate bolts, spikes, frogs, semaphores, switches, steam shovels complete, rock crushers complete, steam hammers complete. Dumping cars, hand cars, small motor cars, railway velocipedes, derrick railway cars complete, ballast cars. Air brakes, automatic couplings, railroad ties of wood. Castings and springs for railway cars, coaches, tenders and locomotives. Electric motors and dynamos and machinery exclusively used for furnishing power and light for railways.

If at any time after importation the plant is used to furnish power or light for any other purpose it shall thereby become liable to duty under the respective paragraphs of Group 2, Class XI.

Stationary pumps and boilers for repairing shops, including transmission shafts, pulleys and belting for same.

FOOT NOTES.

‡ For the application of duty it should be observed:

a. That the machine must be complete. Complete machines include tubes (flues), belting, &c., which form an integral part of such machines, but no spare parts.

b. That spare parts are dutiable according to No. 222 when of copper, and to No. 226 in all other cases.

c. That to be considered as complete, machines must be imported in one sole shipment. Machines imported in two or more shipments shall be liable to the duties stipulated in Nos. 222 and 226, except in the case when a previous and special authorization has been granted by the chief of the customs service.

§ This paragraph includes:

a. The following articles, whoever be the importer: Weighing machines (platform) for weighing sugar cane; complete machines of every kind for grinding cane; cane shredders, sugar clarifiers, complete apparatus for diffusion, purifying apparatus, filters and filtering apparatus, apparatus called "trenes Jamelquinos," complete; furnaces for making animal black; steam desiccators (trampas) and granulators; centrifugal machines, mixing and lifting (subidores) machines, with their motors; vessels called "bombonas" and "cachimbas;" skimmers, distributers and sugar molds; apparatus triple effect or vessels ("tachos") acting in vacuum, also their machines, pipes and cocks, of copper or iron; polarimeters, skimming pails (cacherceras), sugar crushers, cars (porta templa), sulphurous gas apparatus, dumping apparatus for cars (porta templa), cane transporting apparatus, furnaces for burning bagasse, automatic circulator and regulator for vacuum kettle apparatus, apparatus for compressing sugar.

b. Also the following articles when they are imported directly by or for planters on proof of the installation thereof in their establishments: Belting for granulators, centrifugals and lifters (subidores); tubes, flues, cocks; shafts, crowns and coils for sugar mills; boilers, steam plows, donkey engines with or without pumps; carts for the conveyance of cane and the output of the works; stills, gasometers for lighting the works, electric plants and apparatus for use exclusively in lighting the works of a sugar estate or farm. (Note.—If the plant or apparatus is for any other use than that pertaining to a sugar plantation or farm, it will be dutiable under paragraph No. 223.) Fire bricks for the installation of boilers and furnaces; portable rails; plantation railways. (Note.—By railways are understood the articles and materials mentioned for railways under the special provision to paragraph No. 318, and which are intended for the exclusive use of railways for sugar plantations.)

** The machines and apparatus mentioned in this paragraph are those employed by farmers and agriculturists for preparing the ground and gathering the crops; also those employed in order to clean the crops and improve them without essentially changing their nature.

†† Articles corresponding to paragraphs Nos. 218 and 219, and which are expressly imported by ship owners, and on proper verification intended for use in the repair of registered steam vessels of this island, will be dutiable at the rate of 8 per cent. ad valorem.

‡‡ Machines and separate pieces of same, of copper and its alloys, with part of other materials, shall also be taxed under this heading, provided the above materials predominate in weight.

§§ It will be necessary to prove to what manufacture or to what industry spare woolen hose and filters are destined in order to be assessed according to this number.

This order shall take effect upon promulgation in Cuba, October 1, 1901.

This order shall be duly promulgated and enforced in the island of Cuba. WM. CARY SANGER,
Acting Secretary of War.

The War Department makes an authoritative denial of the statements published in the daily press during the past week to the effect that an effort will be made early in the coming session of Congress to establish reciprocity between the United States and Cuba prior to the inauguration of an independent government in the island. In the statements referred to it was alleged that the Secretary, acting under military authority, would reduce the rates of the Cuban tariff on 100 articles of American produce, and that concurrently Congress would be asked to pass a joint resolution reducing the Dingley rates on Cuban sugar and tobacco. The Department states that no reciprocity treaty whatever is contemplated in advance of the hauling down of the American flag in Cuba, which cannot take place prior to the installation of the independent government next May. W. L. C.

Canadian News.

The Government and Mineral Development.

TORONTO, September 27, 1901.—Measures are being taken to make the Mines Branch of the Department of the Interior a more useful and practical division of the public service. Doctor Haanel's selection for the office of Superintendent of Mines of the Dominion was the first step in the organization of a bureau of experts who are to devote their knowledge and experience to exploring and assisting the development of the country's extensive mineral areas. Under Doctor Haanel's direction the assay office at Vancouver, B. C., has been built, equipped and put in operation. He has advised the Government to purchase all the Yukon gold. An office, properly equipped, should, in his judgment, be opened for receiving and weighing the precious metal. It is better, he considers, to keep the gold in the country than to let it be marketed in the Pacific ports of the United States. It will be needed, he maintains, for the Canadian mint. The Government has lately been considering the advisableness of putting an export duty on the gold of the Yukon district, to take the place of the royalty which so many miners manage to evade.

The changes to be made by the Government in the Mines branch of the Interior Department will be completed when the new National Museum is built at Ottawa. In that building the Canadian branch of the Royal Mint is to be placed. The Geological Survey will also be transferred to the same structure. In the Mines branch there will be a sub-department of metallurgy for testing the economic value of ores. A mining specialist is to be employed, whose duties will be to report upon mining areas, &c. Every three months a report is to be issued giving the latest information and all statistics bearing upon the production of the mines.

The Beltung Company's Property.

Later accounts of the iron ore body north of Sault Ste. Marie are no less optimistic than those first given out. The *Star* of Sault Ste. Marie describes the property as a vein of specular iron ore 300 feet wide and testing 60 per cent. metallic iron on the surface. It says that the mountainlike formation of the deposit, the richness of the ore, &c., suggest comparisons with the Helen mine. It is 19 years ago since the deposit was discovered. Development in the interval was precluded by the lack of means for transporting the ore or its product to a market. Now, however, as the Algoma Central Railway is built to the mine, work is being pushed forward by the owners, the Beitung Iron Company. A complete plant of mining machinery is on the way and will soon be installed. The company still hope to be able to ship ore to the Sault this fall.

A Coal Amalgamation.

As the result of several months' work, T. H. Gilmour has succeeded in bringing about the amalgamation of the several companies working coal mines in the Souris field, Manitoba. It is about 20 years since the importance of these lignite deposits began to be recognized. One of the primary objects of the construction of the road that is now the Glenboro' and Souris branch of the Canadian Pacific Railway was to reach the Souris coal fields. Among the first to develop coal properties in the region were the Souris Coal Mining Company. Their mine, the Hassard, at Roche Percee, continues to

be the largest producer. The Roche Percee Colliery Company have an important property under operation. Knight & Carlson have a mine from which they have been shipping the last three years. All these mines have their own railway branches connecting them with the Canadian Pacific Railroad. All these companies' properties will henceforth be worked under the charter of the Souris Coal Mining Company, which contains all the provisions necessary to incorporate them in one. Up to 1893 only 10,000 tons of this coal had been used. From this it has increased to about 60,000 tons a year. By the Manitoba Government this lignite coal is used in all public buildings. It is used by the "Soo" division of the Canadian Pacific Railroad system for every purpose but producing steam. Manufacturers of stoves and heating furnaces are putting lignite grates in those for the Northwest.

Sydney Wants the Shipbuilding Plant.

Sydney has been keenly watching the competition for the steel shipbuilding works, and there has been a quite general belief among disinterested observers that when the time comes for the establishment of these works her advantages as a center of steel production will exceed those of any other port. About a month ago H. M. Whitney made the following statement on this matter in the course of a newspaper interview:

"I am sure that the people who are discussing the establishment of shipbuilding plants in Canada expect that the iron and steel required for use in these plants will be of Canadian manufacture. The Dominion Iron & Steel Company will be ready to supply plates within at least two years from this time, and I do not know any other concern which would be prepared to deliver shipbuilding material any sooner.

"I do not think that there is any need for haste in this matter. Whenever the time is ripe for the establishment of a shipbuilding plant of any magnitude it will, in my judgment, be located at the place which possesses the most natural advantages in the way of obtaining cheap new material and mechanical skill for the works, and such locations will not be governed by a subsidy of $100,000, $200,000 or $350,000.

"Sydney's chances of securing the establishment of this plant when the time comes to build, it seems to me, are as good as those of any other locality, and I should regret at this time, when so much money is needed for sewers, water works, schools and expenses incidental to the rapid development of a large industrial community, to see the town assume so large a burden, which, it seems to me, can be of no present advantage."

On September 10 a public meeting was held in Sydney to consider the advisableness of having a plebiscite taken respecting the granting of a bonus to a shipbuilding plant. A resolution was passed that the Town Council be asked to have such a plebiscite taken. At another public meeting, held nearly a fortnight later, it was decided further to call upon the Town Council to subsidize the company by giving them a $60,000 site. The Council has not yet taken action respecting the plebiscite.

Frederick H. Smith of Liverpool, a prominent member of the Institution of Naval Architects and Shipbuilders, has been in Sydney examining available sites for a shipyard. He has selected one that he considers suitable and is to submit plans to the town.

Minor Notes.

The Nova Scotia Steel & Coal Company are said to have mined 240,000 tons of ore at their Wabana mines in Bell Island, Newfoundland, and to have shipped the most of it.

It is announced that the Canadian Niagara Power Company have awarded the contract for the tunnel and portal to A. C. Douglas, contractor. The price is stated to be in excess of $500,000. The work is to be completed by January 1, 1903. The tunnel is to be 2200 feet in length and 19 x 21 feet in hight and breadth, respectively. It will be bricked throughout in the same manner as the tunnel at the American power works across the river.

Thomas A. Edison, who recently made a personal inspection of the Sudbury district, has written to T. W. Gibson, director of the Ontario Bureau of Mines, stating that he has now 12 prospectors at work in the district, and will have double the number next summer.

The Canadian General Electric Company some time ago obtained judgment against the Hoeffner Refining Company, whose works are at Hamilton, for $8000, on account of goods supplied. To satisfy that judgment a sale of leasehold property has been ordered. The property in question included 20 acres in Barton township of mineral land, carrying certain buildings, plant, &c., that had been sublet to the Nickel-Copper Company for 89 years.

Between 100 and 200 union machinists employed at the Kingston Locomotive Works went out on strike last Wednesday as a protest against the working of men at night.

C. A. C. J.

The British Pig Iron Production.

The statistics which have been collected from makers by the British Iron Trade Association show that in the first half of the year 1901 the total make of pig iron in the United Kingdom was 3,884,544 tons, against 4,540,403 tons in the first half of the previous year. The greatest decrease of production appears in the Cleveland district—the region commonly spoken of as that of Middlesbrough—where the falling off amounts to 130,778 tons; but in the adjoining district of Durham, where there is a much larger relative output of hematite, the reduction has only been 19,902 tons. South Wales, where the output has been materially affected by the situation at the Blaenavon Works and by other circumstances, shows a reduced output to the extent of 97,747 tons; and there is also a material falling off in the hematite producing districts of West Cumberland and Northwest Lancashire. Shropshire is the only district that shows an increase on 1900, but the iron industry of this once important center of pig making is now too limited, both absolutely and relatively, to much affect the general results, which are shown in the following table:

Make of Pig Iron in the First Half of 1901 *Compared with the First Half of* 1900.

	1901. Tons.	1900. Tons.	Decrease in 1901. Tons.
Scotland	475,000	567,000	92,000
Durham	470,186	490,088	19,902
North Yorkshire	923,904	1,054,682	130,778
South Wales	350,846	448,593	97,747
West Cumberland	391,722	451,759	60,037
Lancashire	336,882	365,031	28,149
South Staffordshire	165,151	201,020	35,869
Derbyshire	139,495	177,706	38,211
Notts and Leicester	130,014	132,393	2,379
Northamptonshire	104,000	126,874	22,874
Lincolnshire	120,031	156,987	36,956
North Staffordshire	115,265	168,652	53,387
South and West Yorkshire	121,284	140,613	19,329
Shropshire	20,342	19,846	....
North Wales	20,422	39,159	18,737
Totals	3,884,544	4,540,403	656,355

In the next table the make of different descriptions of pig iron in the first half of 1901 is set out in detail. The general results were as under:

	Tons.
Make of forge and foundry iron	1,765,184
Hematite iron	1,657,957
Basic iron	374,707
Spiegel, &c	86,696

Walter A. Zelnicker of 408 North Fourth street, St. Louis, Mo., manufacturer and dealer in railway, mill and factory supplies, has lately established a branch at 470 Rookery Building, Chicago, Ill. William H. Thompson, formerly treasurer of the Illinois Steel Company, is in charge of this branch, and will handle a complete line of Zelnicker specialties as well as buy and sell new and relay rails.

The wheels of the great power plant at Massena, N. Y., of the St. Lawrence Power Company have been started.

The Iron Age

New York, Thursday, October 3, 1901.

DAVID WILLIAMS COMPANY, - - - - - - - PUBLISHERS.
CHARLES KIRCHHOFF, - - - - - - - - EDITOR.
GEO. W. COPE, - - - - - - - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - - - - - - HARDWARE EDITOR.
JOHN S. KING, - - - - - - - - - BUSINESS MANAGER.

Selling Pig Iron by Fracture.

It seems highly probable that the time is not far distant when the quantity of pig iron sold by fracture will be so small that quotations based on fracture will cease to have much commercial importance. Not many years since all quotations and all sales were based exclusively on the fracture, the value of the iron being determined by the appearance of the crystals. The only distinction observed was based on the character of the iron produced from the ores mined in certain localities which had been found in actual practice to have given special results, such as the ability to carry a greater quantity of scrap, to make particularly fluid iron suitable for very thin or intricate castings, or to produce very strong or tough castings.

The application of chemistry in the manufacture of iron has brought about a great change in this respect. This change has been gradual, owing to the fact that the aid of the chemist was first employed only in the large steel works. Since then the chemical laboratory has come to be a necessary adjunct not only to establishments devoted to the production of iron and steel, but also to their consumption. The aid of the chemist has been sought not only for the better handling of raw materials to produce definite results, but also to enable the consumer to determine precisely the class of iron and steel necessary for his purpose, and also to avoid mistakes in the proper manipulation of such materials as he uses. In no branch of the iron trade has the work of the chemist assumed such importance as in the pig iron trade. From the time the raw materials are assembled at the blast furnace to the time when the resulting pig metal is converted into finished castings or rolled products the oversight of the chemist has come to be almost universally demanded.

It is estimated by large pig iron commission houses handling a general line of pig iron that no less than 75 per cent. of all their sales are now being made under specifications of their chemical contents. In certain branches of the pig iron trade, as, for instance, those consuming strictly Bessemer, malleable Bessemer, low phosphorus, open hearth, basic Bessemer and basic open hearth pig iron, no sales are made except on specifications covering their chemical contents. As so large a part of the production of pig iron now goes into steel or malleable castings, the classes of pig iron enumerated cover by far the greater part of the output. In the foundry trade all sales of pig iron carrying high silicon are likewise made under guaranteed specifications as to chemical contents. Even in the use of ordinary foundry pig iron the large manufacturers of gray iron castings are employing chemists and are specifying iron of certain chemical contents to be used in their mixtures. The consequence of all this is that the quantity of iron purchased strictly according to fracture and with regard to no definite chemical contents has been reduced to a small percentage of the total volume of business. That in time this quantity will be still further greatly reduced is made evident by the disposition of smaller foundrymen to endeavor to secure iron carrying certain quantities of metalloids which they have found to be particularly suited to the requirements of their business or to have yielded good results in their foundry practice.

Manufacturers of pig iron and commission merchants are encouraging this development of their business in every way. They are educating foundrymen to understand the character of the irons which they are purchasing, so as to introduce as great intelligence as possible in the operations of the foundry and lessen complaints regarding quality. This frequently gives rise to a misconstruction of the relations between fracture and chemical contents, some foundrymen endeavoring to contract for their supply of pig iron under specifications covering both fracture and contents, which furnacemen would find a very difficult problem to work out. The fact that foundrymen are paying attention to the chemical contents, however, shows a movement in the proper direction, indicating that in time little or no attention will be paid to fracture. The more the foundryman learns of the operation of the various metalloids the more likely he is to specify what percentage of them his iron shall contain.

One Effect of Consolidation Management.

Brief as has been the career of the majority of the industrial consolidations they are making history rapidly. One of the elements of weakness inherent in nearly all of them was that in the exigencies of their organization they brought into the fold antiquated and poorly located plants. They could not very well be left out, because they possessed either a capacity for mischief or must be taken in for other reasons. Plants of this character constitute a reserve capacity which in times of great pressure of consumption has its legitimate functions. They are the laggards in the march of progress, who are swept into the current of activity in flood times of prosperity, only to be stranded hopelessly when the tide recedes. We have again and again in our boom periods witnessed the re-entry into the ranks of producers of works considered practically worthless and allowed to stand untouched because the wrecker could see no profit in dismantling the old machinery.

Since many of our consolidations were formed during the last boom, the plants were temporarily needed and were acquired, usually at valuations corresponding with the unusual conditions. We have reason to believe, judging from some instances, that when the new management had an opportunity to make studies of comparative costs, the glaring weakness of such links in the chain became only too manifest and with the first spell of slackening trade the work of leveling up began. Some of the cripples were dismantled altogether. Others were modernized, so far as conditions would admit, while some dropped back to their old time occupation of rusting.

During the last two years a very large amount of strengthening and improving of individual plants, of centralizing and consolidating has been done, and much of it is still going on. Although there has been nothing showy or sensational about these changes they have served to put the equipment and plant of American iron and steel works, for instance, into a condition of great strength, relatively speaking. It is a factor which is much underrated at home and abroad, and yet will be found as potent in many respects as the new works erected in and outside of the consolidations. It is possible that in some cases the capital which has thus been spent in betterments might have been more effectively

invested in new construction. But, on the whole, American manufacturers do not err on the side of tinkering with the old, and the conclusion is justified that our productive capacity has not only been developed quantitatively, but, what is far more important, that it has been raised to a higher level qualitatively. When the next trial of strength comes in the arena of international trade this result of the consolidation movement will prove a somewhat potent factor.

The United States Steel Corporation.

In many respects the financial statement issued by the United States Steel Corporation for the first six months of its existence is extraordinary. The figures showing average earnings of over $9,000,000 per month are higher than any who were not among the initiated had any conception of, and reflect the great prosperity of the iron trade at the present time. The fact that in August the earnings reached their maximum, although a considerable number of the admittedly most profitable plants were idle, may possibly be explained by methods of accounting.

In various directions the splendid showing of the United States Steel Corporation will have its effect, but there is probably no single feature which is more commended in the business community generally than the fact that as full and satisfactory an interim report has been given out. After some of the recent experiences with industrials, the course taken by the Executive Committee is commended by all.

CORRESPONDENCE.

The Labor Situation.

To the Editor: Having been a reader of *The Iron Age* for the past 25 years, I may claim the privileges of an old friend. With an experience going back 50 years, both as a journeyman and as a proprietor, I have naturally been struck with the many changes which have occurred in that period. The year 1901, however, has eclipsed all others in this respect, with its formation of trusts, with its labor unions and its strikes, the latter having been almost epidemic during the past season. I have fallen into the habit of looking for the articles on the labor situation in *The Iron Age*, because you are not afraid to give a plain statement of the facts fair both to the employer and to the men. This, I regret to say, our newspapers fail to do, a fact which can only be accounted for under the supposition that our public press is afraid of offending the workingmen. My claim is that they could not better serve the interests of the men than by reviewing the situation plainly for both parties, and pointing out the evils which threaten both the employer and the employee.

At present the question of wages does not seem to be the point at issue, shorter hours and the recognition of the unions being the matters at stake. Bearing on the latter, it seems that, as a rule, if the demands for recognition were made by their own men instead of by parties in no way connected with the manufacturers' interests, success would be very much more likely. With all due respect to the character and achievements of the mechanics in general, it must be confessed that they are no business men, never having studied either the theoretical or the practical side of the questions at issue. They have devoted their time to their trades, and few of them are speakers or are able to address a body of their fellow workmen. Usually they sit by and let some hot heads, who cannot govern their own affairs, tell them what they should do and how to do it. The best, level headed men among the workingmen say nothing because they cannot readily express themselves.

At present one of the matters of grave import confronting both the capitalists and workingmen is the demand for an eight or nine hour day with pay for ten hours. Some points, it seems to me, have not come up in the discussion either among the men or in the press. If we are to have a shorter hour for a day's labor, it should be uniform all over the land, so that all would be on the same footing. Let it be supposed that the shorter day has been accepted. The question will arise whether any real advance is secured in any line. Is it not the consumer who must ultimately pay for the advance, and will it not affect all the necessaries and luxuries of life that go to fit out the workingman's own home? The result will naturally be that the change does not bring to him any actual increase in his returns. The mechanic who is receiving high wages may urge that he can well afford to pay for the advance on all the necessaries, but it is very different for the laboring man, whose income is only from $1.05 to $1.30 per day, who cannot very well look with indifference to such advance. However, aside from even this, there is a very broad moral view. The saying is that there are always two sides to any question. Let it be supposed that the operator of a works should post a notice on his shop doors that after a reasonable time he would require ten hours' work and would only pay at the rate of nine or eight hours. Would this not create a commotion in labor circles generally, to put it very mildly? I cannot see where the moral difference is. Each party is trying to get something for which he is not willing to give full value. Let us look at the sympathetic strike from the same point of view. Let it be supposed that one firm is affected by a strike of its employees, and that a neighbor across the street notifies his men that they cannot go to work until the other man's men resume their labor. It is difficult to see any difference, and yet what a startling proposition it would seem to the men.

It is not the fact that a man belongs to a union which prejudices his employers. It is the arbitrary use which that union makes of its power, and the lack of wise business counsels in its deliberations. If common sense prevailed and the question was oftener put how the rules the union desires to lay down to govern others would be agreeable to itself, there would be less labor troubles.

Let me illustrate this in a homely way. Let us suppose that any one of the many men among the laboring classes who owns a home desired to make some additions or improvements on his property, and called in a boss carpenter or some other mechanic. Let it be assumed that the two could not agree and that the contractor was to claim that if he could not do the work no one else should. Practically speaking, he would stand at the man's front door with a club. How long would it be before the owner would escape from the back way if afraid to go out of the front and enter a complaint to have the contractor removed?

As I stated before, it is not the real grievances of the men which create so many strikes and troubles, but it is the imaginary ones that are brought up by thoughtless men who would not submit to be governed by their own rules, were the case to be reversed.

ISAAC BARTON.

WILLIAMSPORT, PA., September 28, 1901.

The Continental Compressed Air & Power Company have used a number of very large Diamond expansion bolts, manufactured by the New Jersey Foundry & Machine Company, 26 Cortlandt street, New York, on a compressed air plant which they are building at Norwich, Conn. The expansion bolts are 2 inches in diameter and 6 feet long, and are used in anchoring a steel compressor pipe 24 feet in diameter and 208 feet deep. The plant is known as the Tunnel Privilege, on the Quinebaug River. The air will be compressed by water power. The steel compressor pipe was set on rock below the level of the river, and as the upward pressure of the air and water has a tendency to raise the structure out of the shaft, it was necessary to secure it with some device. The Diamond expansion bolt proved to meet all the requirements, particularly on account of its simple adjustment and great holding power. The bolts were placed in the rock sides of the shaft and then fastened to the bands of the compressor pipe.

The Battle of the Boilers.

BY EGBERT P. WATSON, ELIZABETH, N. J.

There are two types of boilers in use in the United States Navy, the "Scotch" boiler, so called because it originated in Scotland, and the water tube boiler. The former is an internally fired shell boiler with circular furnaces, the products of combustion passing from them into a rectangular combustion chamber at the back end and returning through tubes over the furnaces to a breeching in front, from which last they emerge into the smokestacks. The Scotch boiler has a shell of great thickness in large boilers when high pressures are used. The shell of the Scotch boiler is made up of sections, which are shoved together like the cover of a bandbox; this brings two thicknesses of metal together at the circumferential laps; the longitudinal seams (where the sections abut) are not lapped, but are simply brought together and held by butt straps, so called, internally and externally. These butt straps are riveted through and through, and make it possible to shove one section into another at the laps. In brief, the Scotch boiler is very similar in general appearance and type (except that it is internally fired and the products of combustion do not strike the bottom of the shell) to the ordinary return tube boiler, so largely used in factories in this country. The evaporation of the Scotch boiler is fairly good, averaging 8 pounds of water per pound of coal under favorable circumstances and steams well under both natural and forced draft, but its great weight and liability of the internal furnaces and tops of the combustion chambers to collapse under high pressures have caused it to be in disfavor. It is specially liable to injury from collapse of the furnace tops, or exteriors, from the fact that oil, finding its way into the boiler through the feed water, seems to lodge by natural selection almost upon the parts named, and when it does, in even infinitesimal quantities, the furnace tops or crowns are certain to come down. As may be imagined, the weight of the Scotch boiler is a very serious objection; the plates weigh 54 pounds per square foot, nearly (for 150 pounds per square inch), and the ratio of weight to heating surface, in steaming condition, is from 50 to 60 pounds per square foot; the weight per horse-power developed is about 170 pounds.

The steam delivered by the Scotch boiler is not dry, but contains considerable moisture, as much as 2½ per cent. under some circumstances, and the great difficulty of getting at every part for inspection and scaling leaves its condition wholly a matter of surmise. Another objection to the Scotch boiler is its extremely sluggish circulation, and consequently its great differences of temperature in different parts. The bottoms of Scotch boilers heat very slowly, while the tops heat rapidly, so that the strains caused by equal expansion are severe. The long time which elapses before the Scotch boiler can be brought to full steaming power (two to four hours) is a great objection to it for naval service, and it is not to be wondered at that it has many opponents.

The Water Tube Boiler.

As most persons know, the water tube boiler is the anti-type of the fire tube boiler, as water is in the tubes instead of fire, the latter circulating around them. The special fitness which this class of boiler possesses for naval use is the rapidity with which it can be brought into action (30 minutes), its live circulation, whereby all parts under strain are heated equally, and its very light weight. All water tube boilers are not equally desirable, it must be said, but, as a class, they possess the features above named. Add to this the adaptability of the water tube boiler for very high pressures, its dry steam and high average safety from disastrous explosion, and it will be seen that it has essential features which place it in the first class. Possibly because it has recently, or within a very few years, been brought forward, it has been assumed by some that it is a modern type, but this is not the case, for among other things found in the excavations at Pompeii was a water tube boiler used for heating water in a public bath house, and very similar in plan to one of the best known modern boilers. Water tube boilers have no external shells, the steam generated being retained by a drum, or a dome at the upper end of the tube system. This dome is of comparatively small diameter, and has a large factor of safety, so that the boiler itself is termed "nonexplosive," "safety," &c. It is not the fact, however, that water tube boilers have no weaknesses; the chief danger to be apprehended is from the tubes themselves, and their connection with the tube sheets. The tubes have burst from inherent defects impossible to detect, and they have drawn out of the tube sheets from not being properly expanded; also, the tubes are very liable to corrosion externally and internally. With all these objections they are gaining ground as against the only other boiler suitable for marine work.

The advocates of the Scotch boiler, however, by no means intend that it shall be displaced if they can help it, and one very strong reason for its retention is the fact that enormous sums, in the aggregate, have been spent in special tools to manufacture it, which tools would become obsolete if Scotch boilers were discarded. Corrugated furnaces would be useless also, for there are none in water tube boilers, and the plants for these adjuncts are very costly, taken the world over, so that, by and large, it is a serious question which is presented for the consideration of those who have the power to practically settle it. It is, however, a problem which will furnish its own solution in the fullness of time. At the very first naval engagement where a water tube boiler ship, by reason of getting into action at once, so to speak, falls foul of a Scotch boiler ship that cannot maneuver for want of steam the eternal fitness of things will be shown, and the Scotch boiler will disappear from the navies of the world.

Meanwhile the efforts which are being made to delay its exit abroad are curious, though that does not seem to be the exact word to use for the recent so-called experiments in the English navy, *in re.* the "Hyacinth" and the "Minerva." These two vessels, as most of our readers know, have water tube and fire tube (Scotch) boilers respectively. To determine the comparative values of the types the ships were run to Gibraltar and back to England, and with this slender trial, or alleged test of a few days, it was supposed data could be obtained which would settle the issue of water tube *vs.* fire tube boiler. As may be supposed, for engineers it left the matter just where it was before the experiment, but to the British public it may have been consoling. The water tube boiler used was a foreign invention, while the Scotch boiler is of English nativity, and the English technical journals are claiming everything in sight in favor of the Scotch boiler without any warrant for it from the actual occurrences of the voyages of the two vessels. This failure to convict either type of malfeasance is natural, for the simple reason that all the conditions essential to a true verdict did not exist, and could not be had in a voyage of one week on a peace basis. A wholly different aspect would present itself during hostilities, when there is no time for humoring or coaxing a stubborn boiler. Under whatever whip and spur can be applied the boilers must steam, they must remain in action, they must perform every function with reasonable or unreasonable conditions; present surrender is the price of failure if they do not, and that is the issue which has to be faced. Much stress was laid upon the fact that these vessels had a certain radius of action when they had certain quantities of good coal and fresh water on board, but suppose that both of these essentials to keeping in action gave out in actual conflict, what then? Would either of these boilers have made steam with whatever combustible stores happened to be on board, sugar, molasses, the bed clothing, anything that chanced to be in hand? How would the boilers have worked with salt feed in lieu of fresh? It may be said that this was known beforehand, which position we admit; for the matter of that the whole performance of the boilers was known beforehand, not a single thing having occurred which has not already been found out by experiment and commercial experiences of long duration. The water tube boiler chosen as a type was by no means the best, but it represented one which is largely in use, and whose defects are of record. What benefit was to be gained by traversing it?

Progress in Marine Engineering in Ten Years.

A long and elaborate paper upon this subject by James McKechnie of Barrow in Furness, England, has just been published in foreign technical journals; it is too long to be published in full in *The Iron Age*, but we have given a very close rescript of it for the benefit of all who wish to keep informed upon this important subject. Omitting his introductory remarks the author says upon

Fuel Economy.

The progress in the last decade in this direction has not been so marked as in the ten years prior, because each successive attainment requires relatively greater effort. In 1872 the consumption of coal was 2.11 pounds per unit of power per hour, but when the triple expansion engine came into general use this was reduced to 1.52 pounds per unit of power, and for the newest and latest ships it is 1.48 pounds per unit of power. Upon the sea performance of to-day the saving amounts to only 1-5 pound of coal per horse-power hour, as compared with ten years ago. This has been attained without adding to the details of the engine or increasing the difficulties of handling it. The increased economy is partly due to the higher pressures in use, the average being now 180 pounds for 45 triple expansion engines built within the past nine months. As a result of this higher pressure more power is obtained from a square foot of heating surface, the average allowance being now 3 square feet for each horse-power developed; piston speeds have also been augmented, the average now being even in tramp steamers 350 feet per minute, while many merchant vessels attain 880 to 950 feet per minute.

Cost of 100 Ton-Miles on Sea.

The cost of transporting freight 100 ton-miles on sea varies greatly according to the size of the vessels. Thus in a small ship it may reach 8 pounds of coal, as the cost of 5000 tons at 13 knots speed per hour; in a ship carrying 16,000 tons at the same speed the cost would only be 4.4 pounds of coal. Also, in the large vessel the labor cost is greatly reduced by mechanical appliances, while the number of men required to work the vessel does not increase pro rata. This accounts for the steady growth of size in cargo ships. In 1892 the total number of ships over 10,000 tons was only two, now there are 51, ten of them being over 13,000 tons burden.

Steam Pressures.

In considering this portion of his subject the author leaves water tube boilers out, as the question of their adoption is still under discussion; all references, therefore, relate to the cylinder, or "Scotch" boiler, so-called. The preference is for the single ended type, although convenience often requires the double end boiler, but the through combustion chamber has become a thing of the past. The maximum pressure used with this boiler in merchant ships to-day is 267 pounds per square inch, an increase of 25 per cent. in ten years, and in naval vessels of over 100 per cent. It would seem as if the limit of pressure had been reached in this kind of boiler, for the plates are 1 inch 0.59 thick (over 65 pounds per square foot), although the shells are only 13 feet diameter. There was a strong pressure some years ago brought upon Lloyd's to reduce the test strains, but it still remains at double the working pressure, so that for 267 pounds gauge pressure the boilers must be tested to bear 534 pounds without failure or leakage in any part. The strength of plates for marine boiler shells must be 32 gross tons per square inch of section, with a minimum elongation of 18 per cent. in 10 inches.

Boiler Draft and Evaporation.

Except in war vessels the closed stoke hold is seldom used now, the preference being in merchant vessels for open stoke holds with some means of heating the air before it reaches the fires. There are over 3,400,000 horse-power in ships with the last named system in use, and it is asserted that much economy has been gained. With it it is possible to burn more coal per square foot of grate and obtain a better evaporation per square foot of heating surface. The average ratio of grate to heating surface in 39 forced draft steamers built in the last nine months is about 40 to 1, but taking ordinary steamers the ratio is about 42 to 43 square feet of heating surface to one of grate surface. With natural draft the ratio is about 38 to 1. Ten years ago the average for 28 vessels was 31 square feet, so that now the modern steamer has, with cylindrical boilers, 30 per cent. more heating surface per square foot of grate. The coal burned per square foot of grate was, in 1891, 15 pounds, but now 18 pounds are burned by natural draft, and with forced draft as high as 28 pounds. These changes have considerably increased the power developed per ton of boiler carried, 16.5 indicated horse-power being now obtained (including everything) in tramp ships, 20 in passenger boats and 30 in high speed vessels, with 23 in ocean liners.

Oil Fuel.

Very little progress has been made in this direction; all oil carrying steamers use it as fuel, or nearly all, but in merchant vessels generally it is not used. It is not the scarcity of oil, but greater cost in the construction of the vessel for one thing, and dangers incidental to and as yet inseparable from carrying the oil which preclude its more general use. The bulkheads all over the oil carrying portions require to be made oil tight, for if water gets in it is difficult to make it burn; the extra cost per ship over ordinary construction is said to be $10,000. Also, there is a wide difference of opinion as to the best kind of burner to be used. Whether the mechanical jet, steam or air driven spray, or volatilized vapor is the most desirable is not settled. The steam spray involves a loss of fresh water in the main boilers, which has to be made up by the evaporators. This costs about 350 pounds of coal daily for 1000 horse-power; air costs less, but superheated steam vaporization of the oil seems to be the best, as it costs nothing for heat. The difference between the cost of coal and that of oil is still so slight, however, considering all things, that it is the greatest obstacle to general use. Moreover, notwithstanding the difference in the evaporation of coal and oil it has not been found possible in practice to get the same amount of steam with the latter as with the former. The steam *vs.* oil experiments in the "Surly" showed that the coal steam was twice as much as the oil steam. As an auxiliary to coal and burned with it, the advantages are considerable, but in case of grounding and injury to the ship's bottom, where oil is carried in it, there is danger of the oil igniting and burning the ship up, which casualty occurred in the case of a German vessel.

Mechanical Stokers.

These adjuncts to firing are used on only a few merchant vessels at the present time, but there would seem to be a field for them, especially with water tube boilers, which have large grate areas. Some devices of the class mentioned are being experimented with abroad, but as yet the results are uncertain.

Superheated Steam.

The aim of marine engineers at present is in the direction of getting higher pressures, and superheated steam seems to offer advantages in this connection, not because it increases the pressure by superheating, but that it maintains the normal pressure by preventing the loss of heat. Instances are cited where superheating the steam only 37 degrees above normal resulted in obtaining a horse-power for 1 pound of coal per horse-power per hour, but a danger to be guarded against, in connection with apparatus of this character, is locating it in obscure corners or places difficult of access where it would be likely to be neglected.

Gain from High Pressures, Quadruple Expansion Engines.

With steam at 100 pounds per square inch the mean pressure obtained would be 47 pounds, but at 300 pounds initial pressure, the mean becomes 57 pounds, but the gain does not increase in the ratio of the pressure, although the gain from 100 pounds equals 35.7 per cent. It is doubtful whether the use of high stage expansion engines is warranted unless the initial pressure is at least 220 pounds, so that they have not been adopted to

the extent that was expected some years ago. Out of all steamers added to Lloyd's Register in the past nine months, only 3 per cent. have quadruple engines. This is not due to the complication of parts entailed, but simply from economical reasons, for four-crank engines are used with triple stage engines.

Joints and Flanges.

Upon this important detail the author says: Higher pressures have entailed important changes in the material used. Solid drawn steel pipes are now used in place of copper, and gun metal for large bends; cast steel would be used more extensively if sound, thin castings in it could he had. In vessels using 300 pounds per square inch all pipes over 1½ inch diameter are of solid drawn steel, up to 6 inch diameter the flanges are weldless and screwed on; over this size they are lap welded with butt straps over the welds, the flanges being riveted on. Changes were also required in the packing between the flanges, these last being faced in the lathe and copper rings of triangular or other cross section put in between them. This did not answer, on account of the galvanic action set up, which destroyed the flanges by pitting. Recourse was had to steel flanges with scraped faces, the actual joint being made by thin red lead between them; sometimes brazing metal flanges are used. The author recommends a cheaper joint in the shape of oiled asbestos paper without scraping, having used it at 600 pounds per square inch, where joints had to be remade at sea.*

Arrangement of Cylinders.

Ten years ago the largest power used in any steamer was 20,000, and the highest speed 20.7 knots, now 39,000 has been developed with a speed of 23.51 knots, and a steamer is being built to exceed this speed. The low pressure cylinder was only occasionally divided ten years ago, its greatest diameter being 113 inches; such a division was made in the "Campania," and although the power was 50 per cent greater than in the ship with 113 inch cylinders the diameter of the largest cylinder was only 98 inches. Experience shows the enormous importance of balancing the forces to reduce vibration, and this is more easily accomplished with four cranks than with three, provided the cylinders are arranged tandem fashion, and so coupled as to balance each other. There is no reason why, with higher initial pressures, a large number of expansions should not be used, because multiplication of cranks tends to reduce vibration. The author states that in the new "Deutschland" the vertical vibration at the extremities of the vessel, 684 feet in length, does not exceed 3-16 inch.

Cylinder Ratios.

Increased pressure has made changes in this direction. Ten years go, the pressure being 158 pounds average, the cylinder ratios were:

L. P. / H. P.	I. P. / H. P.	L. P. / I. P.
6.77	2.56	2.64

but with a mean working pressure of 180 pounds the average working pressures of 45 triple stage engines built in the past nine months is

L. P. / H. P.	I. P. / H. P.	L. P. / I. P.
7.55	2.74	2.76

In fast channel steamers with from 160 to 180 pounds boiler pressure the ratio of high pressure over low pressure is 5.25 to 5.93, but in the case of cargo boats high expansions are not considered advantageous to economy, where everything is considered, from grate to propeller. In war vessels—cruisers—early ships with cylindrical boilers and 155 pounds of steam, the ratio was five, but now with 210 pounds pressure the ratio is seven. In the case of quadruple stage engines the ratio of low to high is higher than in triple stage engines with equal boiler pressures. Twenty quadruple stage engines recently built have the following cylinder ratios:

L. P. / H. P.	Second I. P. / H. P.	First I. P. / H. P.
10.25	4.40	1.96

* We can certify that this is a good joint for very high pressures, and does not require even asbestos paper: any good linen drawing paper, like Whatman's, answers; the heat hardens it so that it is like parchment after a while.—The Reviewer.

Steam Jackets.

With higher boiler pressures, particularly where the steam is superheated, the necessity for jacketing the high pressure cylinder is not so great, but there are few cases where they are not fitted.

Recent trials with H. M. S. "Argonaut" showed that better results were got without the jacket than with it; the same thing was found in trials with the "Hyacinth." In slow running merchant ships having an early cut off jackets are useful to a limited extent, and there is no doubt but that as pressures increase jackets will be dispensed with.

Slide Valve Relief Rings.

Higher pressures have demanded better balance, or relief in the enormous areas used, and this is obtained by rings of the usual types, with slight changes in the details, but these do not warrant extended references, which cannot be made clear without drawings.

Piston Speed.

The following data show the advances made in this direction: Ocean liners, high speed, 950 feet per minute for 66-inch piston stroke; ordinary liners, 750 feet per minute for 54-inch piston stroke; cargo boats, 530 feet per minute for 48-inch piston strike; fast passenger channel steamers, 880 feet per minute for 33-inch piston stroke.

With high piston speed much greater attention has to be given to lubrication of crank pins and main bearings, and both top and bottom brasses are grooved to allow free circulation of oil. It cannot be said that a large proportion of recent accidents can be traced to high speed of rotation, for care in the selection of materials has much reduced the chances in this direction. Tail shafts and crank shafts have, however, given trouble, and they have been considerably increased in dimensions, crank shafts from 11½ to 13 inches. The stress in pounds per square inch varies greatly in the different classes of vessels. For instance, in the cargo steamer of 3570 horse-power the crank shaft stress in pounds per square inch is 3200 pounds, while in torpedo boat destroyers it is, for 6000 horse-power combined, 6700 pounds per square inch, and so on through the several parts; destroyers being an instrument of warfare, everything is subservient to high speed, and the risks taken are not alone in the machinery.

Auxiliaries and Piston Packings.

As might be supposed, with the increase in pressures there was considerable leakage through glands and pistons. In one case a packing consisting of a powdered white metal, plumbago, and mineral grease was used, held in by vulcanite rings at top and bottom, on the main piston rod, except that metallic rings were substituted later for the vulcanite; it gave no trouble for two years on the high pressure cylinder of a 12,000 horse-power engine, and also on the dynamo high speed engine. For the low pressure cylinders the ordinary soft packing is employed. Flat slide valves, the author thinks, should replace the piston valves in use; nearly all the piston valves in the auxiliary engines in the naval service were solid; they worked well when new, but soon began to wear, and leaked steam to the condenser. Auxiliary engines now exhaust into the evaporator coils (evaporators for making fresh water) also, the connections of the auxiliaries are arranged to allow them to exhaust into the low pressure chests; they have to work against a higher back pressure, but as they are mainly compound engines this is not considered important.

Propellers.

Twin screws are favored on account of their immunity from total disablement in case of breaking down one pair of engines; something like 5½ per cent. of all vessels are now twin screw. Treble screws have been used for one or two merchant vessels of shallow draft, and in naval practice they have been also employed; not on account of their greater propulsive power, but because it allowed the central screw to be used at cruising speed with the side screws idle.

Modern Steamship Speeds.

In 1891 there were only eight vessels whose speeds exceeded 20 knots, but now there are 38; vessels which

attained 19½ knots have doubled, so that there are now 34. The highest velocity attained ten years ago was 25 knots, this being a Brazilian torpedo boat; now the "Viper," H. M. N., has reached a velocity of 37.11, and a mean of 36.58 for one hour.

The highest sea speed attained ten years ago was 20.7 knots by the "City of Paris," but to-day this speed has increased to 23.51 knots in the "Deutschland." The best steamboat, short run, speed is in the channel boats from England to France, which have attained 23.62 knots. These boats are 3096 tons, builders' measurement, and have engines of 8500 horse-power, four cylinder triple stage type.

Steam Turbines for Marine Use.

In electric light work this type of engine has proven exceedingly economical and efficient, using about 12½ pounds of steam per horse-power hour, and there can be no doubt but that on long sea voyages it would be quite as available. Several of this type of engine are in course of development, and it is expected that the results of the "King Edward's" work will add much to a knowledge of steam turbines.

The Use of Steel in Farm Implements.

BY L. R. ARDREY, CHICAGO.

The substitution of steel for wood in the construction of agricultural machines and implements has contributed in no small degree to the expansion of the steel industry in the United States. Twenty years ago the frames and wheels of harvesters, and most of the wheels used on implements, were made of wood, as well as cultivator beams, harrow frames, and a multitude of parts of implements and machines. The change from wood to steel occurred, for the greater part, in the ten years from 1880 to 1890, but it is still going on, the tendency of the day being to eliminate wood entirely in this industry.

Theoretically, wood is durable enough to last through the average life of a machine or implement. The writer has rebuilt worn fences out of split rails that had stood for 30 and 40 years without showing any traces of rot, enduring all the changes of climate, winter and summer, without any protection from paint. But in the practical construction of implements it is found that a percentage of the wood parts will give way or rot in a few years, and renewal is very tedious and troublesome. The Western farmer lives too strenuous a life to stop in the middle of harvest and patch up a wooden machine when steel would not need patching.

The difference between the fence rail and the wooden harvester frame is due to the fact that the frame has a large number of bolts running through it, and the joints where it is put together get loose. Moisture accumulates in these bolt holes and loose joints, and the wood soon rots. In a farm wagon, on the other hand, wood gives general satisfaction. There are few bolt holes in its construction, and these, as well as the joints in which moisture might enter, are protected to a considerable extent. A harvester frame gives out under one-tenth of the exposure that a wagon receives during its average life.

The harvester companies show great diversity in the forms of bars that they use. The McCormick Company indicate a preference for square pipe, which can be fastened together in a compact frame by bolts, like the members of a wooden frame. The Deering and Champion companies use flat bars, riveted together to form very strong frames. Other companies use Z bars, angles and round pipe, each company claiming their design to be "the best in the world." The old wooden "bull wheel," with wood rim and sawed spokes extending clear across, dodging each other at the hub, has been superseded by metal wheels, some of the Bettendorf type, others with "hairpin" steel spokes that are held by nuts, either in the rim or hub. Steel guard or finger bars have replaced the old wooden bars, and sheet steel is used for platform bottoms. Some companies still make the deck or binding table of wood, but others use sheet steel. Perhaps half of the wood now used in the construction of a binder is in the pole.

In modern riding plows, cultivators and corn planters, no wood is used excepting for poles. The wheels are generally of the Bettendorf type, in which spokes of muck bar iron or mild steel are upset into malleable hubs and steel tires. These wheels are also coming into general use, in place of wood, for corn shellers, hay presses, corn huskers and other heavy machines. The old time horse-power, with wooden wheels and frame, is seldom seen in the West, having been replaced by modern traction engines, which are now generally built in sizes that develop 20 to 30 horse-power. Wood is still used principally in building threshing machines, but the wooden straw carrier has been replaced by the steel pneumatic stacker.

But while steel has superseded wood in nearly all the branches of this industry, the old farm wagon remains practically unshaken in popular favor. Steel axles and pressed steel gears have been on the market several years, but 19 farmers out of 20 still prefer oak and hickory in a wagon for general use. Metal wagon wheels with broad tires are, however, meeting with an extensive demand for use in hauling over soft fields and around the farm, and they may be the forerunner of the all-steel wagon.

The Amalgamated Rules and Tin Plate Production.

The restriction of production in the tin plate plants operated under the rules of the Amalgamated Association is a serious matter. Under these rules, for instance, the output of a hot mill running on No. 30 gauge black plate is 5750 pounds in an eight-hour turn. It has been demonstrated by experience in nonunion mills that a crew can easily roll 7000 pounds, and with a fair degree of energy the product is run up to 8000 pounds. Taking the minimum of these quantities, it will be seen that the output of the mill could be increased fully 20 per cent. The Amalgamated Association controls only the hot mills, but the other departments of a tin plate plant are, of course, dependent on the hot mills for their supply of material. The production of these departments is consequently restricted to the same extent. It is unquestionably an unreasonable handicap which is thus placed on the owners of a tin plate plant, preventing them from realizing the full output of which their machinery is capable. The workmen on hot mills being paid by the ton, their daily earnings would, of course, be increased with the increased production.

Enlarging the Monessen Tin Plate Works.—The Monessen Works of the American Tin Plate Company, at Monessen, Pa., will be doubled in capacity at a cost of more than $500,000. The decision to increase this plant was a direct result of continuous operation through the strike, this being the only works of the American Tin Plate Company that was not shut down. Contracts have been awarded to the American Bridge Company for structural material and extensions, and to the Bass Foundry & Machine Company of Fort Wayne, Ind., for engines of 1500 horse-power. Six mills have already been started from the plant at Canal Dover, which is to be dismantled as a result of the strike there. There is also a possibility that six more mills will be brought from Cambridge, Ohio, as the machinery for the three plants is identical. Part of the machinery has been taken to Monessen and it is expected that ground will be broken in a few days. C. W. Bray, chief engineer of the American Tin Plate Company, and P. E. Donner, manager of the Monessen plant, will be in charge of the improvements. Some of the structural iron buildings for the increased capacity are now in course of erection and excavations for the same are being made.

The Merchants' Association of New York has begun the issue of a Monthly Bulletin to report the affairs of the association to its members.

Some Edgar Thomson Records.

PITTSBURGH, PA., October 2, 1901.—(*By Telegraph.*)—On September 23 last some great records for production were made at the Edgar Thomson Steel Works of the Carnegie Steel Company at Bessemer, Thomas Morrison, general superintendent. On the day mentioned the day turn in the converting mill made 106 blows and 1602 tons of ingots. The night turn followed with 119 blows and 1789 tons of ingots, a total of 3391 tons of ingots in 24 hours.

The day turn in the blooming mill made 107 heats and turned out 1435 tons, the night turn following with 118 heats and an output of 1545 tons, or a total of 2980 tons of ingots bloomed in 24 hours.

On the same day No. 1 rail mill turned out 2185 tons of finished rails, while another smaller mill turned out 545 tons, or a total of 2730 tons of finished rails in 24 hours. In No. 1 rail mill heavy sections of rails up to 100 pounds are rolled, while in the other mill lighter sections are rolled.

These records for output have never been equaled and reflect much credit on the management of the Edgar Thomson mill.

Steel Bar Extras.

At the time the advance of $2 a ton was made in steel bars the leading mills, such as Carnegie Steel Company, Jones & Laughlins, Limited, and American Steel Hoop Company adopted a new schedule of base prices and extras which is as follows:

Bessemer bars, 0.20 carbon or less, 1.50c. base. Half extras, standard steel card.

Open hearth, 0.20 carbon or less, 1.60c. base. Half extras, standard steel card.

Carbon, 0.21 to 0.50, .05c. extra.

Carbon over 0.50, .15c. extra.

Lengths of 5 feet and over, no charge for cutting. Lengths under 5 feet, one-half extras, as per steel card.

Plow beams and cultivator beams, 1.50c. net.

Machine straightened and planished soft steel tire, ¾ x 3-16 and larger, 1.70c. net.

U bars, Bessemer, 1.60c. net.

U bars, open hearth, 1.70c. net.

Iron finish steel tire, ¾ x 3-16 and larger, 1.65c. net.

Channels, angles, zees and tees smaller than 3-inch, Bessemer, 1.60c. base.

Channels, angles, zees and tees smaller than 3-inch, open hearth, 1.70c. base.

Hexagons, 1.75c. base. Full extras as per shape card.

Angles, 3 inches and larger, less than ¼ inch thick, 1.85c. net.

Square corner axle billets, 1 3-16 inch and larger, $30 per gross ton. Under 1 3-16 inch, $31 per gross ton.

Cutting to lengths under 5 feet, $1 per ton extra.

Round corner axle billets, about 30 feet long, $1 per ton less than the price for corresponding size of square corner billets.

New Publication.

POWER QUARTERLY.—The September quarterly issued by our contemporary, *Power*, is devoted to the power plants of the Pan-American Exposition.

It first takes up the principal features of the steam engines exhibited and the boilers which supply them steam. Next follow accounts of the gas engines, after which comes a complete description of the Niagara Falls power house and the various electrical appliances found there and at the exposition. Auxiliary appliances connected with the generation and transmission of power are also presented. The book of 67 pages, quarto size, independent of pages devoted to advertising, is profusely illustrated, all the essential characteristics of the several machines, being clearly brought out, the text clearly and thoroughly explaining the many constructions.

Some Duquesne Records.—Some remarkable records for production were made last week at the Duquesne Steel Works of the Carnegie Steel Company, at Duquesne, Pa., Azor R. Hunt, superintendent. The 21-inch mill, running on splice bar shapes, 1½ inch and 4 inch billets, turned out in 24 hours 2185 tons of finished product, beating best previous records by 14 tons. On Wednesday of last week the output of Bessemer ingots was 2335 tons, which beats the highest previous record by 46 tons. The blooming mill of this plant still holds the world's record for output in 24 hours and also in a week, made last May, and which has never been equaled.

PERSONAL.

Some of the head officials of the Homestead Steel Works of the Carnegie Steel Company have changed their residences on account of changes recently made in their official positions. W. E. Corey, president of the Carnegie Steel Company, moves to the residence of Attorney-General P. C. Knox, which he has rented for an indefinite period. A. C. Dinkey, general manager of the Homestead Steel Works, takes the residence of W. E. Corey at Homestead. J. E. Schwab, assistant to his brother, C. M. Schwab, president of the United States Steel Corporation, will move from his residence in Duquesne to a house on North Highland avenue, East End. A. R. Hunt, recently appointed general superintendent at Duquesne, takes the house vacated by J. E. Schwab.

The British Iron Trade Association has organized a commission for the purpose of inquiring into the general industrial conditions which now prevail in this country. Several of the members of this commission are due to arrive to-day, these being J. S. Jeans, secretary of the Iron Trade Association; Ebenezer Parkes, M.P., and Axel Sahlin, manager of the furnaces of the Millom & Askam Company.

Edward Holth, who for the past 15 years has been connected with the Pennsylvania Steel Company, Steelton, Pa., as their mechanical engineer and chief draftsman, has been appointed chief engineer of the Dominion Iron & Steel Company, Cape Breton, Canada. Mr. Holth was presented with a fine gold headed cane by the engineers and draftsmen in his department before he left Steelton.

Andrew Carnegie is expected in New York in November.

Sir Christopher Furness, head of the Furness-Withy Shipbuilding Company, the Weardale Steel Company, the South Durham Steel Company and prominently interested in other English shipbuilding and steel manufacturing enterprises, arrived in New York last week on the "Deutschland" on a visit of inspection to some of the leading shipyards and steel works of the United States.

S. G. Hobson, the London representative of *The Iron Age*, is now in this country to confer with exporters of iron, metals, machinery and hardware as to the best means of developing business. He will visit the leading American cities and will be pleased to supply any information to those interested in the export trade.

James Bennie of David Bennie & Sons, Limited, of Glasgow, is in this country.

Percival Roberts, Jr., a member of the Executive Committee of the United States Steel Corporation, has just returned from Europe.

Among the recent arrivals in this country is Charles Dorman of Dorman, Long & Co. and Bell Brothers, and C. Wrightson, both of Middlesbrough, England.

Reports have it that Charles H. Deere is to be the president of the plow consolidation.

Andrew Carnegie has given a sum of $125,000 toward the completion of a fund for the improvement of the Glasgow Technical College, Glasgow, Scotland.

Archer Brown of Rogers, Brown & Co., pig iron merchants, is expected back from a prolonged European trip to-day. He is a passenger on the "Majestic."

A meeting of the blast furnace employees was held in Youngstown, Ohio, on Wednesday, October 2, for the purpose of forming a National Association, to include employees of blast furnaces all over the United States. Delegates were in attendance from as far South as Alabama. The new organization will be organized along the lines of the Mahoning Valley Furnace Employees' Association and will unite with the Federation of Labor.

OBITUARY.

In the death, last week, of Frederick Fraley of Philadelphia at the great age of 97, there passed away the last of the men who founded the Franklin Institute in 1824.

John L. Blankemeyer, head of the Toledo Foundry & Machine Company and a prominent citizen of Toledo, Ohio, died September 20 at the Toledo Hospital after a long illness, aged 58 years. He was born in Amsterdam, Holland, and came to this country in 1865, founding, in 1870, the business with which he was connected up to the time of his death.

George A. Jenkins, for many years superintendent of the Bessemer department of the Bethlehem Steel Company, died September 22, at St. Luke's Hospital, Bethlehem, Pa., aged 52 years. Mr. Jenkins entered the service of the Bethlehem Steel Company in 1873, after graduating from Lehigh University as an analytical chemist. Of late he had been in the employ of the Duerr Construction Company at Redington, Pa. He was the projector of the Bethlehem Steel Company Relief Association and was its president for a number of years.

Henry K. Flannery, a well-known Pennsylvania ironmaster, died suddenly from heart disease on September 20 at his home at Douglassville, near Pottstown, Pa., aged 67 years.

MANUFACTURING.

Iron and Steel.

The Kidd Brothers & Burgher Steel Company, with offices in the Second National Bank Building, Pittsburgh, have decided to build their new plant at Aliquippa, Pa., on the Pittsburgh & Lake Erie Railroad, about 15 miles from Pittsburgh. The concern have secured 9¼ acres at this place and will build a plant for the manufacture of crucible steel. They expect to be in the market with their product about January 1 next.

It is claimed that the McKeesport Mfg. Company, recently organized at McKeesport, Pa., will build a sheet mill, to be located somewhere along the Monongahela River, in the Pittsburgh district.

No. 2 stack of the Andrews & Hitchcock Iron Company, at Hubbard, Ohio, will resume blast in the latter part of this month. No. 1 stack of this concern, which has been running on foundry, has been changed to Bessemer. No. 2 stack will be started on foundry iron.

The Kitselman Brothers of Muncie, Ind., exect to have their wire and wire nail mill in operation in 45 days. It will have a capacity of 60 tons per day.

The Cumberland Works of the American Tin Plate Company, at Cumberland, Md., have been abandoned. The mills have been shipped to the Humbert Works, at Connellsville, Pa.

At the Painter Works of the American Steel Hoop Company, in Pittsburgh, all of the eight mills are running double turn. Most of the former employees have been given their old places.

The Greenville Works of the Shelby Steel Tube Company, at Greenville, Pa., will be so extensively enlarged that it will become one of the largest cold drawn steel tube plants in the world. A billet piercing plant is to be installed to make billets for the Greenville Works and for those at Toledo, Ohio; Shelby, Ohio; Hartford, Conn.; Auburn, Ind.; and Ellwood City, Pa. A battery of two 500 horse-power boilers will be installed and a 1000 horse-power engine. Two electric cranes will be erected in the mill and two in the yard. The heating furnaces will be equipped with gas producers and the boilers with automatic stokers. The Shelby Steel Tube Company are owned by the United States Steel Corporation and are one of the constituent companies, but are not a department of the National Tube Company.

The Consolidated Iron & Steel Company, Philadelphia, have given their employees at their rolling mill at Bristol, Pa., a 12 per cent. increase in wages.

The Kidd Brothers & Burgher Steel Wire Company, McKee's Rocks, Pittsburgh, manufacturers of polished steel drill rods, polished needle wire and black steel rods, are installing a good deal of equipment in their works, which will increase their capacity about 50 per cent. This new equipment includes new wire bench, new straightening machinery for the largest sizes of steel up to 2½ inches, and also a stand of 6-inch rolls for shape work.

A company have been organized in Chester, Pa., under the title of the Chester Iron & Steel Company. The gentlemen interested have secured the long idle plant of the old Combination Steel & Iron Company, adjoining Roach's shipyard, and will operate the same under the superintendency of John McFadden. The other capitalists interested are P. Haliday, F. F. Vanderfort, H. P. Nash, H. Whittemore and Charles Dreifus of Pittsburgh. Application will be made for a charter in the early part of the present month, and as soon as it is granted active operations will begin.

The South Chester Pipe & Tube Company of Chester, Pa., are contemplating the erection of a large rolling mill in connection with their pipe and tube plant. The structure, which will be of large dimensions, will be of brick and iron and will be located at the eastern end of the present tube works and adjoining the plant of the Tidewater Steel Company. It will be used to furnish the material for the tube mill. Building operations will be commenced as soon as plans are completed.

The Bessemer Works of the Republic Iron & Steel Company, Youngstown, Ohio, are turning out between 550 and 600 tons of steel every 24 hours. The new 26-inch and 18-inch mills at this plant are being built as rapidly as possible and will be ready before the first of the year.

The Bellaire Bessemer plant of the National Steel Company, at Bellaire, Ohio, which was closed by the strike, is again in full operation. The men returned to work as individuals and under the following agreement: 1. No questions shall be asked as to the local organization of the Bellaire workmen upon their return to work. 2. The management at Bellaire shall be permitted to discriminate against not more than 20 men because of unbecoming conduct during the strike. 3. All other men at the Bellaire plant of the National Steel Company when the strike began shall return to their former positions. A. B. Carter is manager of this plant and also of the Mingo Junction Works, at Mingo Junction, Ohio.

William Jessop & Sons, Limited, steel manufacturers of Sheffield, England, have given bond in the sum of $20,000 to the Canton Land Company and the Gordon Land Company, binding themselves to erect a steel plant at Washington, Pa., and to keep it in operation for at least five years. It will be recalled that this concern are to build a plant at Washington, to make sheet steel. Most of the contracts for the new works have been let and active work has been started.

The sheet bar mill at the new plant of the Youngstown Iron & Steel Roofing Company, at Youngstown, Ohio, is about finished and will be started up in a few days. This bar mill was not finished at the time the sheet mills of this concern were started up a month ago.

General Machinery.

The Eynon-Evans Mfg. Company, Philadelphia, Pa., who have for a number of years been making a specialty of steam jet blowers as applied to gas producers, in view of a greatly increased demand are making extensive additions to their brass foundry. Its capacity will be materially increased to take care of the growing business. They are also very busy in the machine shop and pattern shop departments, which are being operated to their full capacity. During the last few years this concern have equipped many of the large steel plants in this country, and are constantly receiving subsequent orders to take care of additions which are being made to them. The company are also doing a large business with their other specialties, injectors, valves, blast nozzles, oil cups, &c., and it seems probable that the extensive additions made to their plant during the summer will be taxed to take care of the growing business.

The Howard Foundry & Machine Company, who formerly occupied a portion of the Huber Building, Philadelphia, Pa., have removed their plant to Lansdowne, Delaware County, Pa., near Philadelphia, where larger and better arranged quarters have been secured. A Philadelphia office, however, will be maintained at 2123 Market street.

Northern Engineering Works, crane builders, Detroit, Mich., now have their crane bridge erecting shop in full running order, having installed one of their 15-ton, 50-foot span, 3-motor electric traveling cranes to handle their heavier crane bridges. This gives an additional erecting floor space of about 70 x 150 feet in a steel and brick building 30 feet high. The company report plenty of crane work on hand.

The American Iron Works, machine and foundry work, second-hand machinery, &c., have recently enlarged and improved their plant at 219-223 East First street, Des Moines, Iowa. New machinery has been installed, including a large steam hammer, and the foundry has been completely rebuilt. W. E. Hamilton is general manager.

Increased business in their line of triplex power pumps has made it necessary for the Goulds Mfg. Company to add another extension to their new plant at Seneca Falls, N. Y. The main machine shop will be extended 100 feet and other buildings enlarged. A. Friedericks & Sons' Company, Rochester, N. Y., have the contract for the building. The steel work will be furnished by the American Bridge Company.

F. S. Perkins Company, Lowell, Mass., who recently bought the old established tool business of the late F. S. Perkins, have added to and brought up to date their entire line of engine lathes, which are now made in sizes from 15-inch to 40-inch. All of these lathes are now equipped with heavier gears throughout, and, it is stated, are capable of taking the heaviest work. The business is continued at the old stand, 63 Fletcher street, Lowell, Mass.

The Hood Machine Company, Birmingham, Ala., expect to

have alterations and extension of their buildings, commenced September 1, finished by the middle of November. Operations do not at all interfere with their manufacturing, in which they are very busy at present. They are building six hydraulic cylinders for an electric power station in North Carolina and doing heavy work for furnaces near Anniston, Ala.

The Caldwell-Watson Foundry & Machine Company, Birmingham, Ala., are now entering upon new buildings at the corner of Fifth avenue and Thirteenth street. The lot on which they are situated is 250 feet on the first named street and 190 feet on the other. The Kansas City, Memphis & Birmingham Railroad track passes in front of the Thirteenth street side, and to it the firm will run a side track. The machine shop building is 100 x 75 feet and the foundry 114 x 75 feet, leaving a space of 36 feet between for office building. Of new machinery added is one 10-foot boring mill, one large steam hammer and one hydraulic wheel press, all of the most modern type. The firm undertake repairing of all kinds of machinery, and estimate on the building of new machinery, especially for mines and furnaces.

The Wulbern Machine & Foundry Company, Birmingham, Ala., a new enterprise, will soon commence operations. The president is Allen W. Krebs, one of the leading contractors and builders of Birmingham; the vice-president, J. Wulbern, is in a mercantile business, and the secretary, Louis G. Wulbern, who has had many years' experience in connection with machinery manufacture. For a time the company will confine themselves to doing all kinds of job work relating to machinery, blacksmithing and molding. They have erected a building 120 x 50 feet on First avenue and fitted it up with the necessary machinery to manufacture, so that when they decide to commence they will be ready to undertake it. The machinery will be run by electricity. The works are expected to be in operation by October 15.

To meet the expansion of their business, the Bay City Iron Works, Oakland, Cal., are erecting a new building, 50 x 75 feet, two stories, and of brick construction, at Third and Washington streets. The first floor will be used as a machine shop, one-half of which will be swept by a 5-ton traveling crane; the second will be occupied by the pattern and millwright shop. The concern do general machine work.

The Coulter & McKenzie Machine Company, Bridgeport, Conn., have purchased a tract of land at Connecticut and Seaview avenues, upon which they will erect a machine shop as soon as they are assured that the intended improvements along the water front will be carried out by the city and government.

The Warren Foundry Company, at Easton, Pa., manufacturers of cast iron pipe, contemplate the building of a new machine shop.

Engines and Boilers.

The Wheland's Machine Works, Chattanooga, Tenn., report that for 60 days previous to the middle of September business was somewhat quiet with them. Weather becoming favorable and cotton commencing to move, fall trade has now started briskly. They have just booked the following orders among others: Engine and boiler for W. M. Carney & Co., Atmore, Ala.; complete hoisting plant for the Douglas Coal & Coke Company, Dunlap, Tenn.; engine and boiler for the Sequatchie Handle Works, Sequatchie, Tenn.; engine, boiler and complete sawmill plant for Carson Bros., Sunbright, Tenn.; engine and boiler for Clark & Gosnels' flour mill, Cornersville, Tenn., and engine, boiler and complete sawmill plant for H. F. Kreider and associates, Knoxville, Tenn.

The Casey & Hedges Mfg. Company, Chattanooga, Tenn., manufacturers of return tubular and water tube boilers, engines, heaters, &c., are arranging to put in a new hydraulic riveting machine with 12-foot gap. This has become necessary on account of the increased pressure of business. This is so far the busiest year the house have experienced.

Foundries.

The Camden Anchor-Rockland Machine Company, Rockland, Maine, manufacturers of anchors, marine and stationary kerosene and gasoline engines, have completed their iron and brass foundry. The building is 100 x 40 feet and thoroughly equipped for the handling of heavy and light castings.

Moffett & Banholzer, designers and manufacturers of high grade castings, Birmingham, Ala., commenced business on August 15, this year. Both had been with the Birmingham Foundry & Machine Works for the last seven years. Mr. Moffett was first foreman of the pattern shop and afterward in the drafting room, while Mr. Banholzer was foreman of the foundry. They occupy the building formerly used by the Birmingham Traction Company for their foundry, and the office building of the Traction Company is used by them as office and pattern shop also. It is their intention to devote themselves strictly to foundry work, in which they have been quite successful since starting and all of which has come to them unsolicited.

The National Malleable Steel Casting Company of Sharon, Pa., have given a contract to the American Bridge Company for a large addition to their works. The main building will be 725 x 350 feet and will cover 7 acres of ground. It will be built of brick and steel. This building will contain six smelting furnaces, 16 gas producers, 12 core ovens and six annealing furnaces. Work on the addition has already been started.

The brass and aluminum foundry of Charles Mousley & Co., Howard street, above Girard avenue, Philadelphia, Pa., was almost entirely destroyed by fire on the morning of September 26. Valuable machinery patterns and castings were destroyed. The loss is estimated at $15,000, said to be covered by insurance.

The new foundry being built by the William Tod Company, at Youngstown, Ohio, is nearly finished. The main foundry building is 250 x 80 feet, with a 40-foot leanto, and is equipped with modern appliances throughout. A number of electric cranes, built by the Morgan Engineering Company of Alliance, Ohio, are being installed.

The Gadsden Car, Foundry & Machine Company, recently organized, are building a plant at Gadsden, Ala., for the manufacture of mining cars and all kinds of castings, making a specialty of cotton factory castings. Later they intend putting in machinery for the manufacture of wheelbarrows. They are in the market for a planer and a wheel press, either new or second hand. The officers are W. G. Bellenger, president and treasurer; R. B. Kyle, vice-president, and H. B. Murphy, general manager.

Work has been started on the new foundry and machine shops to be built by the Mahoning Foundry & Machine Company, at Youngstown, Ohio. The contract for the new building, to be steel frame, brick and stone, and 240 x 132 feet in size, was given to the Penn Bridge Company of Beaver Falls, Pa. The new plant is to be in operation in four months. The concern have a capital of $200,000, and Frank D. Runser is president.

Hardware.

The D. M. Steward Mfg. Company, Chattanooga, Tenn., since becoming the sole property of Mr. Steward some weeks ago, have made extensive improvements in their plant. They are preparing to market a new line of cap mantels for incandescent gas lighting.

Wm. A. Rogers, Limited, Northampton, Mass., are putting up an additional building to be used as a forge room. This building has liberal capacity for forging, tempering, &c. In addition to this they are giving the factory which they purchased from the E. E. Wood Cutlery Company a thorough overhauling, making many changes and repairs which will greatly increase the capacity for manufacturing table cutlery.

The Reynolds Wire Company, Dixon, Ill., are erecting a building as an addition to their wire cloth plant. The additional building will be 50 x 80 feet in size, three stories high, and will be used for the purpose of manufacturing wire goods, such as corn poppers, dish covers, flour sifters, strainers, and other articles related to the wire cloth trade.

Miscellaneous.

The Richmond Pattern Works, C. M. Liphart, proprietor, have opened a shop at 10 North Fourteenth street, Richmond, Va., where they are prepared to make patterns of both iron and wood. This is the first venture to open a large pattern shop in the South.

The Southern Cement Company, Birmingham, Ala., who commenced to manufacture on March 1, have just installed new machinery which will enable them to double their capacity. They have been able to place the whole of their output, which is now 400 barrels per day, in and around the Birmingham district.

The Pittsburgh Drop Forge Tool & Die Company of Pittsburgh have applied for a charter.

The Union Steel Company.—The Union Steel Company, with offices in the Empire Building, Pittsburgh, Pa., have started up their new mills at Donora, Pa., and are manufacturing wire rods, wire nails, plain and galvanized wire, annealed wire, and, in fact, wire of all description. The concern have also facilities for straightening and cutting wire to lengths. They will be pleased to have the inquiries of the trade, and are in position to make reasonably prompt shipment.

The strike is a matter of history at McKeesport, Pa., nearly all the industrial works there being in full operation. The Boston rolling mills of the National Tube Company started on Monday, and by the end of this week the National rolling mill of the same concern will be in operation. The tube mills of the National Tube Company are running full, as are also the Wood plant of the American Sheet Steel Company and the United States works of the American Tin Plate Company at Demmler. Many of the men who were leaders in the strike and who gave a good deal of trouble have been notified that their services will not be needed. Agents of foreign tube mills have employed a good many men, and some of the most skilled tube workers have made five-year contracts to work in English mills.

The Iron and Metal Trades.

Western distributing centers bring the report that a notable buying movement in Foundry Pig Iron has begun, a considerable tonnage thereof being for 1902 delivery. Chicago notes that while all classes of consumers were among the buyers, the Malleable foundrymen probably took the largest individual quantities. Apparently the bulk of the business was taken by Northern furnaces, although the Southern makers who so recently advanced their prices have booked considerable orders. A moderate amount of Pig Iron for Steel making has been taken in the Central West, but offerings on the part of outside furnaces at a slight concession continue.

A seaboard Steel plant is stated to have purchased 10,000 tons of Spiegeleisen from German makers. It is not known to what extent this business is facilitated by the drawback system on export rails.

There is a continued scarcity of Steel, and premiums are being paid, but current business is very light, the majority of consumers being taken care of under sliding scale contracts. There are rumors of a large tonnage booked for next year, but the details have not come to the surface.

Our Pittsburgh correspondent makes the announcement, on official authority, that the tonnage of Steel Rails booked for 1902 delivery aggregates 600,000 tons, exclusive of the 300,000 tons which the mills are likely to carry over from this year, owing to inability to deliver in 1901.

The pressure for deliveries of Structural Steel continues, and it is notable in the smaller sizes of Angles and Beams. Mills have been put on them which have not been producing this line for years. New work is still coming up. A notable order is for 7500 tons for the new Rock Island depot at Chicago.

There is continued activity in Bars and further large contracts have been placed. The Sheet, Tube and Tin Plate mills, of course, are crowded to the utmost. The Wire trade is still active, although specifications are slightly below recent records.

There is to be an early meeting of the Plate makers, who are probably closer up to their orders than other producers. It is not believed that under the circumstances there will be any change in the price. In fact, it is intimated that the principal business will be to extend the life of the association to the next year.

Nothing new has developed in the Copper situation. The trade is settling down to the conviction that the powers propose to maintain the present level of prices. That they are abundantly able to carry out such a programme is not doubted.

A Comparison of Prices.

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Oct. 2, 1901.	Sept. 25, 1901.	Sept. 4, 1901.	Oct. 3, 1900.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia	**$14.90**	$14.85	$14.75	$15.00
Foundry Pig, No. 2, Southern, Cincinnati	**13.75**	13.50	13.00	13.00
Foundry Pig, No. 2, Local, Chicago	15.00	15.00	15.00	14.50
Bessemer Pig, Pittsburgh	15.75	15.75	15.75	13.00
Gray Forge, Pittsburgh	**13.75**	13.70	13.50	12.75
Lake Superior Charcoal, Chicago	17.00	17.00	17.00	18.00
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh (nom)	**26.50**	26.00	24.50	16.50
Steel Billets, Philadelphia (nom)	**27.50**	26.75	27.00	19.25
Steel Billets, Chicago, (nom)	.....	.....	.....	19.50
Wire Rods (delivered)	*35.50*	35.50	36.00	33.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	26.60
Spikes, Tidewater	1.80	1.80	1.80	1.40
Splice Bars, Tidewater	1.50	1.50	1.50	1.25
OLD MATERIAL, PER GROSS TON				
O. Steel Rails, Chicago	**13.50**	13.50	13.00	10.00
O. Steel Rails, Philadelphia	**16.75**	16.75	16.50	12.50
O. Iron Rails, Chicago	**21.00**	21.00	20.50	13.50
O. Iron Rails, Philadelphia	**19.50**	18.50	18.50	15.50
O. Car Wheels, Chicago	*16.00*	16.00	16.50	16.00
O. Car Wheels, Philadelphia	16.50	16.50	16.50	15.50
Heavy Steel Scrap, Chicago	**13.00**	13.00	12.00	10.00
FINISHED IRON AND STEEL, PER POUND:				
Refined Iron Bars, Philadelphia	1.62½	1.62½	1.62½	1.25
Common Iron Bars, Chicago	1.65	1.65	1.60	1.50
Common Iron Bars, Youngstown	1.50	1.50	1.50	1.25
Steel Bars, Tidewater	1.65	1.65	1.62½	1.30
Steel Bars, Pittsburgh	1.50	1.50	1.50	1.05
Tank Plates, Tidewater	1.75	1.75	1.75	1.30
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.05
Beams, Tidewater	1.75	1.75	1.75	1.65
Beams, Pittsburgh	1.60	1.60	1.60	1.50
Angles, Tidewater	1.75	1.75	1.75	1.55
Angles, Pittsburgh	1.60	1.60	1.60	1.40
Skelp, Grooved Iron, Pittsburgh	2.00	2.00	2.00	1.40
Skelp, Sheared Iron, Pittsburgh	2.05	2.05	2.05	1.47½
Sheets, No. 27, Pittsburgh	*3.25*	3.25	3.75	2.80
Barb Wire, f.o.b. Pittsburgh	2.90	2.90	2.90	2.80
Wire Nails, f.o.b. Pittsburgh	2.30	2.30	2.30	2.30
Cut Nails, Pittsburgh	2.05	2.05	2.05	1.95
METALS:				
Copper, New York	16.50	16.50	16.50	16.67
Spelter, St. Louis	**3.95**	3.95	3.80	4.00
Lead, New York	**4.37½**	4.37½	4.37½	4.37½
Lead, St. Louis	*4.25*	4.25	4.27½	4.32½
Tin, New York	*24.75*	24.75	25.45	29.65
Antimony, Hallett, New York	8.50	8.50	8.50	9.50
Nickel, New York	60.00	60.00	60.00	55.00
Tin Plate, Domestic Bessemer, 100 lbs., New York	4.19	4.19	nom.	4.19

Chicago.

FISHER BUILDING, October 2, 1901.—*(By Telegraph.)*

The feature of the week has been the heavy volume of business in Pig Iron. The demand for Bars continues active. Structural Material is in strong request. Sheets are extremely scarce, notwithstanding the starting of the idle mills. The Rail trade continues quite active. Plates are about the only article in the list of which the demand is not heavy, but even in this line a fair trade is reported.

Pig Iron.—The past week has been the heaviest in the tonnage placed under contract since early in the spring. It has thus been one of the best weeks this year. The good condition of the Steel trade has evidently had an effect on Pig Iron buyers. The stiffening in Southern prices must also be credited with some little influence in improving the tone of the trade. The contracts placed embrace orders for numerous lots of 1000 to 10,000 tons. All classes of consumers were represented among the buyers, but the Malleable foundrymen probably bought the largest individual quantities. Much of the Iron was purchased for deliveries running through a considerable portion of next year, and in some instances contracts called for deliveries beginning in January. Many more inquiries are in the market, and the coming week promises to be another period of large

business. The Southern furnace companies have advanced their prices, and quotations have been marked up accordingly. The Northern furnace companies are reported to have made some concessions to the heaviest buyers, and thus prices have been more nearly equalized. We quote as follows:

Lake Superior Charcoal	$17.00 to $18.00
Local Coke Foundry, No. 1	15.50 to 16.00
Local Coke Foundry, No. 2	15.00 to 15.50
Local Coke Foundry, No. 3	14.50 to 15.00
Local Scotch, No. 1	15.75 to 16.25
Ohio Strong Softeners, No. 1	16.00 to 16.50
Southern Silvery, according to Silicon	15.40 to 15.65
Southern Coke, No. 1	15.15 to 15.40
Southern Coke, No. 2	14.40 to 14.65
Southern Coke, No. 3	13.90 to 14.15
Southern Coke, No. 1 Soft	15.15 to 15.40
Southern Coke, No. 2 Soft	14.40 to 14.65
Foundry Forge	13.40 to 13.65
Southern Gray Forge	13.15 to 13.40
Southern Mottled	13.15 to 13.40
Southern Charcoal Softeners, according to Silicon	15.50 to 17.00
Tennessee Silicon Pig	16.40 to 16.65
Alabama and Georgia Car Wheel	19.50 to 20.50
Malleable Bessemer	15.75 to 16.00
Standard Bessemer	17.50 to 18.00
Jackson County and Kentucky Silvery, 8 per cent. Silicon	15.75 to 16.25

Bars.—Transactions continue on a large scale. Manufacturers of Bars are surprised at the number of important consumers who had not covered their requirements and are compelled to come into the market for material to meet early necessities. The mills are crowded with work, and the new establishments just starting are finding no difficulty in securing orders at full prices. Mill shipments of Common Iron or Bar Steel are held at 1.65c. to 1.70c., Chicago, according to delivery. Numbers report no improvement in the condition of their stocks. Large consumers are continually being compelled to draw on these stocks and are purchasing in such quantities as to keep all desirable sizes short. It is almost impossible to secure any Light Hoops. Small lots are selling at 2c. for Common Bar Iron, and 1.90c. to 2c for Steel Bars.

Structural Material.—Large sales of all classes of Shapes are being made for a variety of purposes. Car builders have been particularly heavy buyers, and, as more car orders are being placed, a further strong demand is assured from that quarter. The new Rock Island Depot, in this city, has partly been placed under contract. The train shed alone will take 5000 tons of Steel. The building will require, perhaps, 2500 tons more. Numerous small structures are being figured on, and further building projects are assuming shape. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.75c.; 18 inches and over, 1.85c.; Angles, 1.75c. rates; Tees, 1.80c.; Universal Plates, 1.75c. to 1.85c.; small lots of Beams and Channels from local yards are quoted at 2.25c.; Angles, 2c. rates; Tees, 2.15c.

Plates.—New business is not so heavy. The mills, however, are well supplied with work, and it will be some time until they have caught up with their orders. The demand from store is excellent. Mill shipments are quoted as follows: Tank Plate, ¼-inch and heavier, 1.75c. to 1.80c., Chicago; Flange, 1.85c.; Marine, 1.95c. Jobbers are selling small lots from store at 1.90c. to 2c. for Tank, and 2.25c. for Flange, with the usual extras for heads, segments, lighter gauges, &c.

Sheets.—With the exception of Stove Pipe sizes the demand from stock is not so urgent. Nevertheless stocks in local warehouses are so broken, and shipments from the mills are coming forward so slowly that prices are still held up to top figures. Small lots are quoted at 4c. to 4.10c. for No. 27 Black Sheets and 60 and 5 to 65 off for Galvanized Sheets. The mills are reported to be oversold on No. 18 Sheets and heavier, and consumers are being advised that it will be some time before the supply will be adequate to the requirements of the market.

Merchant Pipe.—The volume of business grows larger as prices more nearly approach the figures prevailing before the strike. While prices are gradually becoming easier they are still arbitrary, as stocks are badly broken and the supply of standard sizes is very short.

Boiler Tubes.—The mills are now making better deliveries, and although the demand on jobbers' stocks is heavy, prices have been revised, and are now about the same as those prevailing before the strike. Quotations are as follows:

	Steel.	Iron.
2¾ to 3 inches	57½	47½
1¾ to 2½ inches	50	40
1 to 1½ inches	35	30
6 inches and larger	52½	45

Rails and Track Supplies.—The Rail trade continues active. Large inquiries are being received, and good orders are steadily being booked. A particularly strong demand is noted for Light Rails, on which the local mills cannot promise deliveries before January. The railroad companies are also placing heavy orders for all kinds of Track Fastenings for next year's delivery. Heavy Rails are unchanged at $28, and 45-lb. Rails at $30. Track Fastenings are firmly held as follows: Splice Bars, 1.65c. to 1.75c.; Spikes, 2.10c.; Track Bolts, with Hexagon Nuts, 2.90c. to 2.95c.; Square Nuts, 2.75c. to 2.80c.

Merchant Steel.—The demand is heavier. Manufacturing consumers are placing contracts for good qualities, and jobbers also find it necessary to replenish their stocks. Mill shipments, Chicago, are quoted as follows: Smooth Finished Machinery Steel, 2c. to 2.10c.; Smooth Finished Tire, 1.85c. to 2c.; Open Hearth Spring Steel, 2.30c. to 2.40c.; Toe Calk, 2.40c. to 2.60c.; Sleigh Shoe, 1.85c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 55 to 60 off. Ordinary grades of Crucible Tool Steel are quoted at 6¾c. for carloads and 7c. to 7½c. from store; Specials, 12c. upward.

Old Material.—A good healthy trade is reported with little fluctuation in prices. Old Iron Rails are somewhat easier, buyers being now able to secure small quantities without paying a premium for them. The following are approximate quotations per gross ton:

Old Iron Rails	$21.00 to $21.50
Old Steel Rails, mixed lengths	13.50 to 14.00
Old Steel Rails, long lengths	16.50 to 17.00
Heavy Relaying Rails	25.50 to 26.00
Old Car Wheels	16.00 to 16.50
Heavy Melting Steel Scrap	13.00 to 13.50
Mixed Steel	10.50 to 11.00

The following quotations are per net ton:

Iron Fish Plates	$16.50 to $17.00
Iron Car Axles	21.00 to 21.50
Steel Car Axles	16.00 to 16.50
No. 1 Railroad Wrought	16.00 to 17.00
No. 2 Railroad Wrought	14.00 to 14.50
Shafting	16.50 to 17.00
No. 1 Dealers' Forge	13.00 to 13.50
No. 1 Busheling and Wrought Pipe	12.25 to 12.75
Iron Axle Turnings	11.25 to 11.75
Soft Steel Axle Turnings	10.00 to 10.50
Machine Shop Turnings	10.25 to 10.75
Cast Borings	5.00 to 5.25
Mixed Borings, &c	5.25 to 5.50
No. 1 Boilers, cut	11.50 to 12.00
No. 2 Boilers, cut	9.50 to 10.00
Heavy Cast Scrap	11.25 to 11.75
Stove Plate and Light Cast Scrap	8.50 to 9.00
Railroad Malleable	12.00 to 12.50
Agricultural Malleable	11.00 to 11.50

Metals.—While the demand for both Copper and Lead is only moderate, the producers have made no change in prices. Carload lots of Lake Copper are maintained at 17c. and Casting brands at 16½c. Pig Lead is unchanged at 4.32½c. for Desilverized and 4.42½c. for Corroding in 50-ton lots. Dealers continue to quote selling prices on small lots of Old Metals as follows: Copper Wire and Heavy, 15c. to 15½c.; Copper Bottoms, 14c.; Pipe Lead, 4.15c.; Zinc, 2.75c.

Coke.—No relief from the car shortage has been experienced, urgent appeals by consumers being made to the Coke companies to hasten shipments as the local supply is practically exhausted. Prices are nominally unchanged, but high premiums are paid for anything available.

The various departments of the Crucible Steel Company of America have combined their office forces in Chicago at their own building, 64 and 66 South Clinton street. The policy of the company will be to continue the individuality of the different makes of steel, the same as formerly, and their various warehouses in Chicago will be maintained and a very complete stock carried in each. The combining of the office forces was done as a measure of convenience to themselves, and to their customers. E. T. Clarage is general sales manager for the Western district. The works represented at the general office in Chicago are as follows: Park Steel Company, Crescent Steel Works, Sanderson Bros. Steel Com-

pany, Howe, Brown & Co., Limited, Singer, Nimick & Co., Limited, La Belle Steel Works, Atha Steel Company, Anderson, Du Puy & Co., Aliquippa Steel Works, Spaulding & Jennings Company, Beaver Falls Steel Works, Cumberland Steel & Tin Plate Company, Burgess Steel & Iron Works, St. Clair Steel Company and St. Clair Furnace Company.

Philadelphia.

FORREST BUILDING, October 1, 1901.

There is not much change to report in the Iron and Steel markets. Prices are strong and the demand is moderately active, with quite a large amount of new business in prospect. Appearances seem to indicate, however, that prices have about reached their full limit, as most of the business now pending will be held in abeyance unless better terms can be had than are represented by current quotations. There is a good deal of unevenness in prices on Pig Iron, some getting higher figures, while others are glad to get business on last week's quotations. It is tolerably clear that the heavy purchases made during last month have about covered the requirements of consumers for all 1901, so that immediate business for next year is not likely to be had unless at some modification in prices. Furnaces are in first-class condition, however, and are free to sell or not to sell, as they have no stocks to bother them, and, besides that, have enough metal sold to keep them perfectly easy during the remainder of the year. It is therefore optional with them whether they should begin selling for next year at reduced prices, and the same conditions are open to consumers. Neither buyers nor sellers are in a position to be crowded, so that the chances indicate a period of comparative dullness until one side or the other sets the ball rolling. In Steel and Finished Material almost any kind of a case might be presented. The first mentioned is so scarce that anywhere from $27.50 to $28 is quoted for October Steel, while for six or eight months, commencing with November, $25.50 to $26 could easily be arranged. The scarcity of Sheets, Structural Material and Steel Bars makes an extremely strong market, while Iron Bars and Plates are comparatively easy. The problem to be solved, therefore, is how long will the scarcity continue, and how long and to what extent will it affect the general market. There is plenty of business at present, and probably will be until the close of the year, but beyond that there is a degree of uncertainty that engenders a good deal of caution.

Pig Iron.—A slight decrease in activity has been noticeable during the past two or three days. There is still a good deal of inquiry for Iron, but large buyers are not disposed to go beyond the very inside figures, and in some instances they intimate that for long delivery they must do still better. It appears to be a case of "Columbia" and "Shamrock," so evenly matched that it is hard to say which will come out ahead, but to make it a clean race there must be more breeze than is in sight at the moment. In plain words, the market is disposed to relapse into dullness, and unless some new feature is developed it is liable to drift along for some time without much change in prices. Sales are reported at advanced quotations, as much as $15.75 for No. 2 X Foundry in some cases, but there is a fair supply of good Iron at about $15, and occasionally at a little less than that. In some quarters it is thought that the attempt to push prices to higher figures will be a failure, but there are a few brands of Iron that people will have without regard to 25c. or 50c. in price. Such Irons are at the moment rather scarce, consequently the prices are relatively high. Ordinarily, however, the market stands just about as it did a week ago, and, with furnaces well sold up and consumers fairly well covered, there is no apparent reason why there should be any change at all at this time. Conditions are not precisely the same with all the furnaces, however, consequently a little unevenness in prices is not to be wondered at. In a general way the range may be quoted as follows for city and nearby deliveries, and from 25c. to 50c. less at points within a radius of 100 miles south or west: No. 1 X Foundry, $15.50 to $16; No. 2 X Foundry, $14.90 to $15.50; No. 2 Plain, $14.50 to $14.75; Standard Gray Forge, $13.75 to $14; Ordinary Gray Forge, $13.25 to $13.50; Basic (Chilled), $14 to $14.25; Bessemer, Nominal, at about $14.50.

Billets.—Steel for October shipment is hard to get at any price, but $27.50 to $28 is said to be as well as could be done at the present time. Sales for shipments of equal quantities during the three months of the year have been made at $26 to $26.50, and for 1902 a good deal less than $26 could be done, but buyers are bidding very cautiously, as the outlook is not considered sufficiently settled to warrant the high figures that are now ruling.

Plates.—There is a fair amount of business offering, but buying is not as heavy as it was two or three weeks ago. Prices are about the same as last week, except on Universals, which could be had at less money, providing a good sized order was presented—viz., for city and nearby deliveries: Plates, ¼-inch and thicker, 1.75c. to 1.80c.; Universals, 1.70c. to 1.75c.; Flange, 1.90c. to 2.10c.

Structural Material.—There is no variation in the reports from this branch of business, mills being crowded with work and totally unable to make prompt deliveries. Prices are nominally unchanged, but every order has to be taken on its merits and price fixed in accordance therewith. Ordinarily quotations are as follows for seaboard or nearby deliveries: Angles, 1.75c. to 1.85c.; Beams and Channels, 15-inch and upward, 1.75c. to 1.85c.

Bars.—There is a good demand for Bars, but mills appear to have less difficulty in making deliveries, and to that extent the market is easier. Prices are very firm, however, and for carload lots as a minimum quantity are about as follows for Philadelphia and nearby points: Best Refined Iron, $1.60c. to 1.65c.; Steel, 1.62½c. to 1.67½c.

Sheets.—There is probably a little easing up, although the mills are very much crowded with work and are hard pushed for deliveries. Prices are nominally as last quoted, but every order is taken on its merits and depends a great deal on the delivery required. Philadelphia prices are about as follows for best Sheets (Common Sheets two tenths less): No. 10, 2.60c.; No. 14, 2.80c.; No. 16, 2.90c. to 3c.; Nos. 18-20, 3.50c.; Nos. 21-24, 3.60c.; Nos. 26, 27, 3.75c. to 3.80c.; No. 28, 4c. to 4.25c.

Old Material.—The market is firm and in some articles is a shade higher, with special strength on the higher grades. Prices for deliveries in buyers' yards are as follows: Choice Railroad Scrap, $18.75 to $19.50; Country Scrap, $15.50 to $16; No. 2 Light (Ordinary), $12.50 to $13; No. 2 Light (Forge), $13.75 to $14.25; Machinery Cast, $13.75 to $14.25; Heavy Steel, $16.75 to $17; Old Steel Rails, $16.75 to $17; Old Iron Rails, $19.50 to $20; Wrought Turnings, $11.75 to $12.50; Cast Borings, $7.25 to $7.75; Old Car Wheels, $16.50 to $17; Iron Axles, $23.50 to $24; Steel Axles, $19 to $20.

St. Louis.

CHEMICAL BUILDING, October 2, 1901.—(*By Telegraph.*)

Pig Iron.—The Pig Iron market has undergone a very material change for the better since last week, and a very brisk demand is now ruling. A general advance of 50c. per ton has been made in all grades by the furnaces. Some say that they have all they can handle to fill their orders for certain grades up to March. A few sales are reported at an advance over the new prices just made. The aggregate of one day's orders during this past week with some houses make a gratifying comparison with what were considered good days in other years. It is the feeling that this is in no sense a boom period in the trade, and while prices may rule higher there will be no inflation. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry	$14.75 to $15.00
Southern, No. 2 Foundry	14.00 to 14.25
Southern, No. 3 Foundry	13.50 to 13.75
Southern, No. 4 Foundry	13.00 to 13.25
No. 1 Soft	14.50 to 14.75
No. 2 Soft	14.00 to 14.50
Gray Forge	13.00 to 13.25

Pig Lead.—The Pig Lead market is quiet, with a fair demand ruling. Prices remain the same. Soft Missouri is quoted at 4.25c. to 4.25½c. and Chemical at 4.30c. to 4.35c.

Spelter.—The demand in the Spelter market has continued heavy, and prices have fluctuated considerably. The feeling prevails that from the present level prices are apt to work higher. We quote from 3.95c. to 3.97½c.

Bars.—The condition in this branch of the market continues along the same favorable lines as when last reported. The advance which was announced last week has not caused any complaint from the buyer. Jobbers are somewhat handicapped on account of their inability to get prompt deliveries, and therefore have difficulty in keeping their stocks complete. We quote: Iron Bars, 1.65c. to 1.75c.; Steel Bars, 2c. Jobbers quote Iron Bars, 2c. to 2.10c.; Steel, 2.10c. to 2.15c., full extras.

Rails and Track Supplies.—The tonnage is heavy for both Heavy and Light Rails, and the conditions are considered very satisfactory. Prices are unchanged. Track Supplies are in good demand with no change in prices. We quote: Splice Bars, 1.75c. to 1.95c.; Bolts, with Square Nuts, 2.75c. to 2.90c.; with Hexagon Nuts, 2.90c. to 2.95c.; Spikes, 2c. to 2.05c.

Cleveland.

CLEVELAND, OHIO, October 1, 1901.

Iron Ore.—The better demand in the market for Iron Ore, brought about by the increased demand for Pig Iron, is causing a heavy fall movement of that material. This has brought all shippers upon the market for vessel tonnage, especially the independent shippers, who have virtually been excluded from the docks, in a large measure, by boats trading for the United States Steel Corporation this summer. The sharp inquiry for boats has caused an increase in the carrying rates during the week, the first of the season, and Duluth is now paying 90c. on good cargoes. Dock space at the receiving ports is still at a premium. The cars are rather scarce for the movement direct from the boats to the mines, and as many shippers refuse to dock their Ores, the dispatch at the docks is not what it might be. Inquiries have been made for Ore during the week, but no large sales have been made as yet. The quotations have been $4.25 for Bessemer and $3 for non-Bessemer.

Pig Iron.—The heavy buying of both Bessemer and Basic during the last few days has enhanced the value of the Foundry grades. The market is very stiff at the old prices, with most of the producers holding for better rates than are now being obtained. Even at the prevailing prices deliveries are impossible within five or six weeks, as the supply is pretty well sold up. Some furnaces are not promising deliveries before December 1. Sales have been made this week at $14 to $14.25 for No. 1 and $13.50 to $13.75 for No. 2, Valley furnace. Some of the producers are holding for 50c. better on the ton than sales have been made at recently, and the general belief on the market is that such will be obtained in a comparatively short time. Southern Irons are up 50c. this week, as No. 2 is quoted at $11, Birmingham, bringing it up to $14.70 on the market here. The heavy buying of Basic has continued during the week, and now the furnaces in the association are not promising deliveries within six or eight weeks. The producers are feeling very comfortable over the business now booked for the next two months. Basic quotations now are $14.25 in the Valley or $15, Pittsburgh. Some of those who have very little Iron to sell are making quotations of $15 in the Valley, but have made no sales. Bessemer Iron has been sold heavily during the week and the Bessemer Association furnaces announce that contracts have been placed which entirely consume the product up to December 1, with some contracts which require deliveries beyond that period. The prevailing price has been $15.25 in the Valley, which seems to be acceptable alike to the trade and to the producers. There is, therefore, hardly a possibility of a change, unless the demand becomes more urgent for material. The United States Steel Corporation continue to lead the buying.

Finished Material.—The law of supply and demand operating in the Bar Iron trade this week has produced another advance of $1 a ton. The association governing the output has increased the quotation to 1.55c., Youngstown. Bar Steel is also quoted at 1.60c., Pittsburgh, an advance of $2. The heavy sales of Iron have accounted for this advance. Contracts have recently been placed making provisions for deliveries as far ahead as June 1, 1902. Except in extraordinary cases deliveries are not offered on present sales in less than four or five weeks. The heavy buying of Sheets continues at the prevailing market prices, and the supply has been so well covered that deliveries are not offered inside of eight or nine weeks. Further large orders of Steel Rails for delivery next year have been made this week. Some of the lines in this territory, which had not comtemplated buying until after the first of the year, are now in the market covering their needs for repair work. It is not likely that much new work will be done in track laying, except by electric companies, but the tonnage will be needed for replacing Old Rails with heavier new ones. The market quotation of $28 is undisturbed. There is a good stiff demand for Structural Material, as both buying and specifications on former orders are very heavy. Rumors of advances in prices have so far resulted in nothing tangible. On all materials shipment has been seriously hindered during the last few weeks by a shortage of cars on the railroads. Many of the mills are complaining that the conditions have seldom been worse than they now are.

Old Iron.—The Scrap market is livelier than it has been for months. The biggest dealers have refrained from making advances in the prices so far, but it is noticeable that the material is not moving as freely as the conditions would warrant. A change to a higher basis is expected before the end of the week. Borings seem to be the principal feature. Prices hold as follows: No. 1 Wrought, $15 net; Heavy Steel, $15 gross; Steel Rails, $15 gross; Wrought Turnings, $10 net; Cast Borings, $6 net.

Cincinnati.

FIFTH AND MAIN STS., October 2, 1901.—(*By Telegraph.*)

Very nice sayings are now in order regarding the Pig Iron market. The indications of the past two weeks have pointed to a good buying movement as close at hand and it is here in good force, all sorts of orders from 10,000 tons down to carload lots have been pouring in and adding up a total which will give September a fine showing. There has been a good, square advance of 50c. a ton on all Southern grades and on the basis of $11, Birmingham, for No. 2, the market is strong and steady. Nearly all the tonnage placed is for the first half of next year, and there is a marked scarcity of Foundry grades for shipment this year. There will in all likelihood be a continuance of activity for some little time to come. Freight from Birmingham is $2.75 to this point; from Hanging Rock district, $1.10. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	.... to $14.25
Southern Coke, No. 2	.... to 13.75
Southern Coke, No. 3	.... to 13.25
Southern Coke, No. 4	.... to 12.75
Southern Coke, No. 1 Soft	.... to 14.25
Southern Coke, No. 2 Soft	.... to 13.75
Southern Coke, Gray Forge	.... to 12.75
Southern Coke, Mottled	.... to 12.75
Ohio Silvery, No. 1	$14.60 to 15.00
Ohio Silvery, No. 2	14.10 to 14.60
Lake Superior Coke, No. 1	15.10 to 15.35
Lake Superior Coke, No. 2	14.60 to 15.10
Lake Superior Coke, No. 3	14.10 to 14.60
Southern Basic	13.75 to 14.00
Car Wheel and Malleable Irons.	
Standard Southern Car Wheel, chilling grades	$18.25 to $18.75
Standard Southern Car Wheel, No. 2	17.25 to 17.75
Lake Superior Car Wheel and Malleable	18.50 to 19.00

Plates and Bars.—The market is quite strong and active, and an advance is expected at once in Youngstown freight rates, which will work up prices 3c. per 100. For the present, no change is made in quotations. We quote, f.o.b. Cincinnati: Iron Bars, in carloads lots, 1.65c., with half extras; same in small lots, 1.85c., with full extras; Steel Bars, in carload lots, contract delivery, 1.62c.; same for prompt delivery, 1.70c. to 1.75c.; Base Angles,

in carload lots, 1.80c.; Plates, ¼-inch and heavier, 1.90c. to 2c.; 3-16 inch, 2.10c.; Sheets, No. 16, 2.90c. to 3.

Old Material.—The market is in a normal condition, same prices are ruling in the main as a week ago. We quote dealers' buying prices, f.o.b. Cincinnati, as follows: No. 1 Wrought Railroad Scrap, per net ton, $14 to $14.50; Cast Railroad and Machine Scrap, $12.25 to $12.75; Iron Axles, $19 to $20; Iron Rails, $17.25 to $18.25; Steel Rails, rolling mill lengths, $14.75 to $15.25; short lengths, $13.75 to $14; Car Wheels, $17 to $17.50. All prices except No. 1 Wrought on the basis of gross tons.

Manager Houston of the Republic Iron & Steel Company has resigned the charge here and gone to Chicago as vice-president of the company. L. A. Burrell succeeds as manager of the Mitchell Tranter business and district sales agent.

Pittsburgh.

HAMILTON BUILDING, October 2, 1901.—(*By Telegraph.*)

Pig Iron.—In addition to the purchases of Bessemer and Basic Pig Iron made by the United States Steel Corporation and noted last week, the corporation have bought 10,000 tons of Basic Iron for November shipment at $14.25, at furnace. The Iron market is strong and the Bessemer Furnace Association are holding metal firmly at $15.25, furnace. However, some of the outside furnaces are shading this price slightly, and are selling Iron at $15 to $15.10, at furnace. We note two sales of 5000 tons of Standard Bessemer Iron made by outside furnaces last week at $15, at furnace. Another sale of 10,000 tons at the same price is reported. The market on Gray Forge is firmer and Valley furnaces are quoting as high as $13.25, at furnace, equal to $14, Pittsburgh. However, local Forge Iron is lower than this and can be bought at about $13.75, Pittsburgh. Foundry Iron is also reported to be firmer and in better demand. We quote Bessemer Iron in large lots from Bessemer Furnace Association $15.25, at furnace, and from outside furnaces $15, at furnace, to $15.10 or $15.75 to $15.85, Pittsburgh. Local Gray Forge is $13.75 and No. 2 Foundry Iron about $14.25, Pittsburgh. We note a sale of 500 tons of local Forge at $13.75, Pittsburgh.

Steel.—There is now a spread of nearly $11 a ton between prices of Standard Bessemer Iron and Steel Billets, due to scarcity of the latter for prompt shipment, but this condition will right itself as soon as the supply of Steel has been increased. It is claimed that up to $27, Pittsburgh, has been offered for Billets for prompt shipment. It is said that some business has been placed for next year in Steel at prices much lower than the above.

Rails.—We can state officially that upward of 600,000 tons of Rails have been placed by the roads for next year's delivery at the full price of $28. This tonnage is in addition to about 300,000 tons of this year's tonnage, which the mills will carry over into next year. The roads are placing orders for Rails much earlier this year than last year, and one or two prominent trunk lines have already bought.

Coke.—We are advised that the Coke market is stronger and best brands of Main Line Coke are held at about $1.75 a ton.

Muck Bar.—The market is fairly strong and we quote best grades of Muck Bar at $29.50 to $30, Pittsburgh. There is some inquiry in this market at present.

(*By Mail.*)

The Iron market does not present anything of special importance this week. Tonnage keeps up remarkably well and the mills are full of work and fully two or three months behind in orders. The quickness with which business recovered from the shock occasioned by the assassination of President McKinley is remarkable and is good grounds for believing we are in a period of prosperity that will last for a long time to come. The market is strong all along the line, but there have been no changes in prices since our last report.

Plates.—A meeting of the Plate Association is to be held in New York on Thursday, October 3, but it is not believed there will be any change in prices. It is stated that established prices are being firmly held, and are fair to the mill and to the buyer. Tonnage in Plates is only fair, and the mills could take care of a good deal more business than is being placed. In fact, a few of the Plate mills are short of work. We quote: Tank Plate, ¼ inch thick, up to 100 inches in width, 1.60c. at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.80c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price to 3c. Plate more than 100 inches wide, 5c. extra 100 lbs. Plate 3-16 inch in thickness, $1 extra; gauges Nos. 7 and 8, $3 extra; No. 9, $5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots. Terms, net cash in 30 days.

Structural Material.—A good deal of tonnage is being placed, and two or three large contracts have recently been given out calling for about 15,000 tons. There is a steady run of small orders, which aggregate a good deal of work, and the Structural mills are filled up for the next two or three months. The contracts for the extension of the Wabash Railroad into Pittsburgh, involving 10,000 tons or more of material, may be placed this week. A consolidation of the surface roads in Pittsburgh may lead to the abandonment for the present, at least, of the proposed L roads in this city. Beams in small lots for quick shipment bring from 1.75c. to 2c. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6 inches, 1.60c.; smaller sizes, 1.55c. to 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.50c., half extras, at mill; Universal and Sheared Plates, 1.60c. All above prices are f.o.b. Pittsburgh.

Sheets.—The strike, so far as the Sheet trade is concerned, is a thing of the past, and the output of Sheets at the present time is probably larger than ever before in the history of the trade. In spite of this it will take the mills several months to catch up with contracts. There is still a wide range in prices and the market is somewhat difficult to quote. No. 27 Black Sheets, box annealed, one pass through cold rolls, are quoted in carload lots for shipment over balance of the year at about 3.25c. at mill, and No. 28 $2 a ton higher. Sheets for quick shipment out of stock are quoted as high as 3.50c. for No. 27 in small lots. Prices of the American Sheet Steel Company are as follows on lots of 500 bundles or more of Black Sheets, one pass through cold rolls: No. 10, 11 and 12, 2.30c.; Nos. 14 and 15, 2.40c.; Nos. 16 and 17, 2.50c.; Nos. 18, 19, 20 and 21, 2.60c.; Nos. 22, 23 and 24, 2.70c.; Nos. 25 and 26, 2.80c.; No. 27, 2.90c.; No. 28, 3c.; No. 29, 3.15c.; No. 30, 3.25c. On lots less than 500 bundles the American Sheet Steel Company will not make shipments except through jobbers, and for direct shipments from mill in less than carload lots an extra charge of 10c. per 100 lbs. is made. Galvanized Sheets are held at 70, 10 and 5 off in lots of 500 bundles and over, and at 70 and 10 in smaller lots. The outside mills quote Galvanized at about 70 and 10 off in carloads for shipment in the next 60 days.

Bars.—The new price of 1.50c. minimum on Steel Bars is being rapidly held, but a good many contracts remain to be filled at the old price. A fair amount of tonnage is coming in, and with old orders will give the mills all the tonnage they can take care of for the next two or three months. In fact, some of the leading Bar mills are practically out of the market as sellers of Bars for delivery in this year. We quote Bessemer Steel Bars at 1.50c., with $2 advance on Open Hearth stock and the usual advances on High Carbons and Shapes. We quote Common Iron Bars at 1.50c., Valley, half extras, at mill. Refined Iron Bars are held at 1.60c., Valley mill, in carload lots.

Skelp.—All the mills of the leading Tube interests are now running full time and consumption of Skelp is very much heavier. This concern are taking the output of Skelp of some of the largest makers. The market is very strong, and we quote Grooved Iron Skelp at 2c. and

Sheared at 2.05c. to 2.10c., at maker's mill. Grooved Steel Skelp is held at about 1.85c. to 1.90c. and Sheared 1.90c. to 1.95c., maker's mill.

Pipes and Tubes.—Some of the outside Tube mills that made heavy advances in prices during the strike have readjusted their quotations and now quote on a much lower basis. The leading Tube interest made no change in prices during the strike, and are booking orders right along at the old figures. It is claimed that small outside Pipe mills, who have to buy their Skelp in the open market and pay present high prices, cannot come out even, or at best, have very little profit in making Pipe. Prices quoted by the National Tube Company to consumers in carload lots are as follows:

Merchant Pipe.

	Per cent. Black.	Per cent. Galvd.
⅛ to ½ inch and 11 to 12 inch	61	48
¾ to 10 inch	68½	56

Casing, Random Lengths.

	S. & S.	I. J.
2 to 3 inch	58	53½
3¼ to 4 inch	63	59
4¼ to 12½ inch	65	61½

Casing, Cut Lengths.

	S. & S.	I. J.
2 to 3 inch	53½	59
3¼ to 4 inch	59	55
4¼ to 12½ inch	61½	57½

Boiler Tubes. Up to 22 feet.

Steel.	Per cent.
1 inch to 1⅞ inch and 2¾ inch to 5 inch, inclusive	65½
2 inch to 2½ inch, inclusive	60
6 inch and larger	59
Iron.	
1 inch to 1½ inch and 2½ inch	43½
1⅝ inch to 2¼ inch	43
2¾ inch to 13 inch	53

Prices to jobbers are usually slightly lower than the above. It should be noted, however, that some of the independent Tube mills and also the jobbers who can ship Pipe out of stock, are getting higher prices than are quoted above.

Coke.—Of the 21,733 ovens in the Connellsville region, 19,475 were active last week and 2258 idle. The output was 220,385 tons, a gain over the previous week of nearly 11,000 tons. Shipments were 10,218 cars. There is a better demand for Furnace Coke and the output of the ovens is being shipped about as fast as made. We continue to quote strictly Connellsville Furnace Coke at $1.75 to $2, and 72-hour Foundry at $2.25 to $2.50 a ton. Main Line Furnace Coke is quoted from $1.50 to $1.60, and Foundry from $1.90 to $2 a ton. A few brands of Main Line Coke, not so favorably known, are quoted slightly less than $1.50 a ton at oven.

Birmingham.

BIRMINGHAM, ALA., September 30, 1901.

The Iron market the past week was decidedly better in every respect. Not only was there an improved demand, but there was an advance established of 50c. per ton over the minimum price of the preceding week, which places the market on the basis of $11 for No. 2 Foundry. The demand was easily active, and all grades of both Foundry and Forge were taken with avidity. Some large buyers were in the market, and in some cases had difficulty in supplying their wants. Not infrequently orders were scaled down, owing to the scarcity of desired grades. Particularly was this the case in nearby deliveries. The buying is broadening, and sales for 1902 delivery are now not infrequently made. Nearly all buyers are clamoring for prompt delivery, and telegrams are common to the effect that stock piles have disappeared and speedy shipments are necessary to keep works running. There is plenty of talk of another advance this week. If the demand continues it will probably mature. The aggregate sales for the week largely exceeded the current output. It must be remembered that only about three-fourths of our furnace capacity is being utilized, as several are being overhauled, and it is not probable that we will be turning out our maximum capacity for some time to come. With No. 2 Foundry at $11 we have No. 3 Foundry, $10.50; No. 4 Foundry, $10, and Gray Forge, $9.75. No. 1 Soft is $12, and No. 2 Soft is $11. There was no demand for Basic Iron, it being known to the trade that for the present this grade cannot be had, and there are no items of interest concerning the Steel mill.

There are some additional plants talked of to which allusion has previously been made, but nothing definite concerning them has yet been concluded. Several enterprises, not industrial, are being broached, and the prospects for continuous improvement are first class. The aggregate cost here and vicinity of improvements for the year ending May 1 was over $13,000,000. The mining and manufacturing business was $50,000,000. The total volume of business was $77,000,000. This is increasing. The population is having constant accessions. Improvements are constantly being made, and confidence in the solidity of our growth is universal.

New York.

NEW YORK, October 2, 1901.

Pig Iron.—Sellers report a moderate movement in this district. Melters generally report a good deal of activity, and the consumption seems active. Some of the leading furnace companies of Eastern Pennsylvania have taken so many orders that their stocks are being reduced quite rapidly. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, $16 to $17.50; No. 2 X, $14.75 to $15.75; No. 2 Plain, $14 to $14.50; Gray Forge, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $15 to $15.50; No. 2 Foundry, $14.75 to $15; No. 1 Soft, $14.75 to $15; No. 2 Soft, $14.50 to $14.75; No. 3 Foundry, $13.75 to $14; No. 4 Foundry, $13.50 to $13.75; Gray Forge, $13.25 to $13.50.

Cast Iron Pipe.—The market continues very active, and leading shops are filled with work for some time to come. In fact, the statement is made that never before has the demand been as urgent and large at this season as now. The underground road, of course, is locally taking a good deal of Pipe.

Finished Iron and Steel.—A number of small structures have been contracted for during the past week and there are some moderate sized inquiries in the market for Cuba and the Antilles. Generally speaking, however, the export movement is light. We quote as follows at tidewater: Beams, Channels and Zees, 1.75c. to 1.80c.; Angles, 1.75c. to 1.80c.; Tees, 1.80c. to 1.85c.; Bulb Angles and Deck Beams, 2c.; Sheared Steel Plates are 1.80c. to 1.85c. for Tank, 1.90c. to 1.95c. for Flange, 2c. to 2.05c. for Fire Box. Charcoal Iron Plates are held at 2.25c. for C. H. No. 1, 2.75c. for Flange, and 3.25c. for Fire Box. Refined Bars are 1.60c. to 1.65c.; Soft Steel Bars, 1.62½c. to 1.65c.

Metal Market.

NEW YORK, October 2, 1901.

Pig Tin.—Business was less active and prices showed a rapid decline. Spot sold as low as 24.15c. this morning, but closed somewhat firmer, with 24.25c. to 24.50c. October was quoted 24.20c. to 24.50c., November 24.10c. to 24.50c. and December 23.75c. to 24.25c. London reached its lowest this morning with £109 5s. for spot and £107 5s. for futures. There was a slight recovery at the close, however, the quotations remaining £110 2s. 6d. for spot and £108 2s. 6d. for futures. The statistical position, a summary of which is printed below, shows a little better than was generally expected. But it seems that the heavy shipments from the Straits have taken the confidence out of the market on the other side, as it is expected that these shipments will be kept up for the balance of the year. The market here is in a peculiar position. The Boston bull interests are loaded up with high priced stock for spot and especially future deliveries, while the consumers, by reason of the declining market, have covered their wants for this year and in some instances even for the first quarter of next year. It is this condition that accounts for the lack of demand at present from consumers. The statistics for Europe and the United States, as compiled by the New York Metal Exchange, show:

	Tons.
Total visible supply September 30, 1901	17,611
Against visible supply August 31, 1901	16,327
Against visible supply September 30, 1900	17,606

Copper.—There is no change in the conditions here, consumers are buying from hand to mouth, and where the delivery extends over any length of time the purchaser is protected by a guarantee clause. It is said that the large consumers have been buying Lake Copper on this basis ever since the talk of a possibility of a wide cut in prices began. The nominal quotations are still 16½c. for Lake, 16¼c. to 16⅜c. for Electrolytic and 15¾c. to 16⅜c. for Casting. The London market continued to decline, the lowest point reached being £60 10s. for spot. The closing price to-day showed a marked recovery, however, in £64 10s. for spot and future. Best Selected is unchanged at £72. Owing to the low prices for spot and future deliveries in London a heavy business was transacted there. And it is rumored that a good portion of this was done by parties who contemplated bringing it here for refining. The disappearance of the premium on futures is considered an unfavorable sign by merchants here. This is regarded as an indication that there is not much confidence in the future of the article. Until last Monday there was a premium of 10 shillings, but this was all wiped away. During the month of September the exports amounted to but 6354 tons, while the imports during the same period aggregated 4109 tons. The total exports for the first nine months of 1901 were 69,650 tons, while during the corresponding period of 1900 they were 120,394 tons.

Pig Lead.—There are lively rumors floating about, but the actual condition of the market with regard to the metal is unchanged. Lead is now the target of the overproduction argument, and there is considerable whispering about the tremendous stocks which it is alleged the American Smelting & Refining Company are carrying. Parties in the trade who keep close to existing conditions are not surprised to hear this, and do not regard it as of much moment, as the big company have been suspected of this before. There is also a good deal of talk about a movement to combine the miners against the trust. This also is not given much consideration by the trade. The American Smelting & Refining Company continue to quote 4.37½c., New York, and 4.32½c., St. Louis, for Desilverized. The London market has declined sharply, the closing price to-day being £11 12s. 6d.

Spelter—Is slowly advancing in price, but the volume of business has not increased. The market, in fact, is rather quiet. Quotations received from various quarters are at variance, ranging from 4.05c. to 4.25c. It might be mentioned that merchants handling the ordinary brands quote from 4.05c. to 4.10c., and those having the high grades 4.25c. St. Louis quotes 3.97½c., which is considered rather high. It is thought here that certain interests in the West are raising the price a little in order to dispose of a surplus stock which accumulated during the Steel strike. The London market is unchanged at £16 17s. 6d. Exports for the month from Atlantic ports 1706 tons Zinc Ores, and 138 tons spelter; arrivals, 25 tons spelter.

Antimony—Is unchanged, Hallett's is quoted 8½c. and Cookson's 10¼c., outside brands are sold for 8¼c.

Nickel—Is unchanged, prices continuing on a basis of 60c. for lots not covered by yearly contract.

Quicksilver—Is unchanged. The price quoted is $51 per flask of 76½ lbs. in lots of 50 flasks and more. London is unchanged at £9.

Tin Plate.—In London prices have declined to 14 shillings 7½ pence. This market is unchanged, the American Tin Plate Company quoting for the balance of the year on a basis of $4.19 for standard 100-lb. Cokes, f.o.b. New York, and $4 per box, f.o.b. mill.

Jones & Laughlins, Limited.—The report that Jones & Laughlins, Limited, of the American Iron & Steel Works of Pittsburgh, were negotiating for the purchase of ore properties of Corrigan, McKinney & Co., is untrue. Probably what gave rise to the report is that B. F. Jones, Jr., J. B. Laughlin and H. S. Keihl of Jones & Laughlins, have gone up to the regions to look over the ore properties recently bought by the firm from P. L. Kimberley. Some of this ore property will be opened up before long and the visit of these parties to the mines is for the purpose of determining just what is needed in the way of equipment and otherwise to put the mines in operation. Jones & Laughlins have no intention of buying any more ore properties at present.

The New York Machinery Market.

NEW YORK, October 2, 1901.

Another quiet week was spent in the machinery district. That business should have quieted down so during the last two or three weeks is beginning to cause comment in the trade, for prospects a few weeks ago were exceedingly bright and merchants had every reason to expect an early activity and a strong buying movement. Just when this condition was expected to show itself a lull overspread the market which is still in evidence. Inquiry has been good, showing that considerable work is contemplated, but the promoters are pursuing a waiting policy, constantly putting off the actual closing of the business. This is more particularly the case in relation to large transactions, as the business in small orders has continued on a fair scale.

The effect of the machinists' strike is still felt in certain lines. In some shops, it is said, the delay resultant to the strike has put deliveries back four months. In these cases the factories were well filled with work when the men went out, so there was plenty to do when the wheels were again started. The subsequent orders, a great many of which had been held back during the strike, added to this congestion, and it appears that the machinery builders have not extricated themselves yet. It was a concern so situated that advanced prices from 8 to 10 per cent. a week or so ago. There have been reports during the week of other parties who have advanced slightly, and there was also some talk about concerns who had readjusted their price-lists so as to show a slight decline in values.

Regarding deliveries, a prominent machine tool merchant of this city said yesterday: "I find that our shops are much busier than I thought them to be, basing my calculations on the condition of business here. When I returned from my vacation a few days ago I found that one of our shops hadn't touched a good sized order that we sent them over a month ago. They claim that they are still working under the pressure which followed the settlement of the machinists' strike."

Another well-known representative of the trade, who has also just returned from a brief vacation, said: "I am surprised to find that things have held back as they have since I left town. There are a number of things that I felt certain would be out of the way when I returned, but found that they were still held *in statu quo*. And the orders that I am referring to are for machinery that I am certain must soon be installed, but why the principals are holding off is a mystery to me. I know that there are a number of consumers who seem to think that the iron and steel market is apt to break and carry with it the prices of finished products. But that they are mistaken in their view is clearly apparent by the trend the iron market has taken during the last few weeks."

On previous occasions we have referred to the progress in the erection of the new car shops at Readville, Mass., by the New York, New Haven & Hartford Railroad. It is believed in the trade that the matter has progressed to a stage where the purchase of the necessary machinery equipment will soon follow. Several representatives of the company have just concluded a tour of inspection of railroad shop systems throughout this country and Europe, and it is said that the work at Readville will now be pushed to completion with all possible speed. The company are desirous of making the new shops the most efficient and up-to-date in existence. Consequently the work has been held back a little pending the investigation of new methods suggested. Colon M. Ingersoll, Jr., is the chief engineer, and John Henney is superintendent of motive power. Their offices are at New Haven, Conn.

A report has been circulated in the trade to the effect

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING OCTOBER 2, 1901.

Cap'l Issued.		Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.	Closing quotations.	Sales.
$10,000,000	Am. Bicycle Co., Com.....	- 1⅞	2 - 2½	.....	- 2½	.....	.....	...	1,600
20,000,000	Am. Bicycle Co., Pref.....	.....	.....	.....	-10	.....	.....	...	300
10,000,000	Am. Bicycle Co., Bonds....	.....	.....	.....	.....	.....	-64½	...	2,000
29,000,000	Am. Car & Foundry, Com..	28¼-28¾	29 -29½	-29¼	28⅝-29¼	28¼-29	26 -28½	26	16,645
29,000,000	Am. Car & F'ndry, Pref.§..	83½-84	.....	.....	83⅝-83¾	-83⅜	80 -83½	80	3,985
7,500,000	Bethlehem Iron†.....	.....	.....	.....	-61	.....	.....	...	25
15,000,000	Bethlehem Steel‡‡.....	.....	.....	.....	.....	.....	.....	...	.....
7,974,550	Cambria Iron, Phila.*....	.....	.....	.....	-41	.....	.....	...	50
45,000,000	Cambria Steel*.....	25 -25⅝	25¼-25⅝	25¾-25⅞	25⅝-25¾	25¼-25⅝	25⅛-25½	25⅛	12,015
23,000,000	Colorado Fuel & Iron.....	93½-94⅞	94 -97⅜	95 -97	94¾-95	92¼-94¼	93 -95	93	9,900
24,410,900	Crucible Steel, Com.....	.....	.....	.....	.....	.....	.....	...	.....
24,399,500	Crucible Steel, Pref.....	.....	.....	.....	.....	.....	.....	...	.....
1,975,000	Diamond State Steel‖§§...	.....	.....	.....	- 2⅞	.....	.....	...	150
15,000,000	International Pump, Com..	-45⅝	45½-46¼	46¼-46½	46⅛-46⅝	-46⅛	-45	45	1,600
8,850,000	International Pump, Pref..	.....	84 -85	.....	.....	-85	.....	...	300
11,000,000	International Silver.....	.....	.....	.....	.....	- 6⅜	6½- 6¾	6¾	300
10,750,000	Penna., new, Com., Phila..	.....	-46	.....	.....	.....	.....	...	25
16,500,000	Penna., new, Pref., Phila.§.	.....	.....	-85	-84½	-85	.....	...	600
12,500,000	Pressed Steel, Com.....	-39¼	40 -41¼	.....	39¾-40⅝	.....	38½-39½	38½	1,900
12,500,000	Pressed Steel, Pref.....	79 -79¼	80 -81	.....	.....	.....	78 -79½	79½	1,600
27,191,000	Repub. Iron & Steel, Com..	15 -15½	15¼-15⅝	-15½	15 -15½	15 -15⅜	15⅛-15¼	15¼	4,220
20,306,900	Repub. Iron & Steel, Pref..	66 -66⅜	66½-67	66¼-66¾	66½-66¾	66 -66¾	-66	66	2,900
7,500,000	Sloss-Sheffield S. & I., Com.	.....	.....	.....	.....	.....	.....	...	.....
6,700,000	Sloss-Sheffield S. & I., Pref.§.	.....	.....	.....	-80	.....	.....	...	100
20,000,000	Tennessee Coal & Iron.....	60¼-62	-62⅝	63¼-64½	61½-63	61¾-62½	61½-62¾	62	9,900
1,500,000	Tidewater Steel‖.....	- 6	.....	6¼- 6⅜	.....	- 6	.....	...	400
510,361,300	U. S. Steel Co., Com.‖‖....	41½-42⅞	43 -44	43⅞-44¾	43½-44⅛	43¼-44	43⅝-44¾	43¾	218,600
508,511,200	U. S. Steel Co., Pref.‖‖....	91⅝-93⅛	93⅜-94¼	94½-95	94 -94¾	93½-94⅛	93⅞-95	94	90,900
1,500,000	Warwick I. & S.‖.....	- 7	.....	- 6⅞	.....	.....	.....	...	500

Preferred stocks 7 % cumulative unless otherwise stated. § 7 % Non-Cu. §§ New stock. ‖ Par $10. ‡‡ Par $50, $1 paid in. ‖‖ Authorized Capital $550,000,000 Common; $535,000,000 Preferred; * Par $50. † 6 % guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph. ¶ Ex-dividend.

Bonded Indebtedness: American Bicycle Co., $10,000,000 sinking fund gold debentures 5 %; Cambria Iron Co., guaranteed 4 % per annum on $50 par by Cambria Steel Co.; Cambria Iron Co., $418,000 6 % debenture 20-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Diamond State Steel Co., property leased from Diamond State Steel Co. at 4 % on $1,000,000, $7.50 on Steel stock paid in, total capital $2,000,000; International Pump: Blake & Knowles S. P. Co $1,000,000 6 %; Tennessee C., I. & R. R. Co., $3,000,000 5 %, $8,367,000 6 %, $1,114,000 7 %, $1,000,000 7 % cu. pref.; Pennsylvania Steel, $1,000,000 5 % Steelton 1st, 1917, $2,000,000 5 % Sparrow's Point 1st, 1922, $4,000,000 consolidated, both plants; Bethlehem Iron, $1,351,000 5 % maturing 1907, interest and principal guaranteed by Bethlehem Steel Co.; Republic Iron & Steel, none; Warwick Iron & Steel, none; Colorado Fuel & Iron Co., Col. Fuel Co. Gen. Mort. 6 % $830,000, Col. Coal & Iron Con. Mort., 6 % $2,411,000, Col. Fuel & Iron Gen. Mort. 5 % $2,674,000, also outstanding $2,000,000 preferred stock; Sloss-Sheffield St. & I. Co., Sloss I. & S. first mortgage 6 %, $2,000,000, Sloss I. & S. general mortgage 4½ % $2,000,000. U. S. Steel Corporation $304,000,000 5 % gold bonds, also Am. S. & W. Co. $130,656, Federal Steel Co. $9,822,000 Illinois 5 %, $7,417,000 E. J. & E. R. R. 5 %, $1,600,000 Johnson 6 %, $6,732,000 D. & I. R. R. R. 5 %, $1,000,000 2d D. & I. R. R. R. 6 %, $10,000 land grant D. & I. R. R. R. 5 %; National Steel $2,561,000 6 %.

that the Ingersoll-Sergeant Drill Company of Easton, Pa., had definitely decided upon a location for their new works. It was said that the new plant would be built at Trenton, N. J. We are informed that this announcement is entirely premature, as no decision has been arrived at as yet by the officers of the company. Trenton, among numerous municipalities, has offered inducements to the company, but further than an investigation of the facilities offered nothing has been done. At the New York offices of the company it is stated that it will probably be a number of weeks before a decision is arrived at.

What is nowadays considerd a pretty fair list of wood working machinery has been sent out to the trade for estimating by the J. D. Warren Mfg. Company of Masonic Temple, Chicago. In addition to the list which follows, there is also required two 10 horse-power motors, two 20 horse-power motors, 80 feet of 2½-inch shafting, 14 tight pulleys and a quantity of belting. The wood working machines required are: One swing saw for cutting off lumber in the rough; one 30-inch single head planer; one 24-inch jointer or buzz planer; one rip saw, iron top with tilting gauge; one rip saw, iron top with mitering attachment with foot treadle; one cross cut saw; one tenon machine, danbeld head, also danbeld coze or side head, also danbeld saw attachment; one mortising machine, self hole cleaner; one upright boring machine; one danbeld head, or spindle shaper, iron top; one band saw, about 30-inch wheel, that will take 18-foot saw; one dovetail machine, single spindle, adjustable iron top; one dovetail machine, 12-spindle, adjustable iron top; one sticker (top, bottom and side heads), 9-inch top and bottom head; one each sandpaper machine, royal steel drum, 24, 30, 36, 42 inches.

We are informed by the Abendroth & Root Mfg. Company, whose plant in Brooklyn was recently destroyed by fire, that instead of rebuilding the old works, as was first expected, they will add extensively to the plant of the Wright Steam Engine Company, at Newburgh, N. Y., which they have acquired. In addition to the purchase of the Newburgh plant, the Abendroth & Root Company have also taken over their entire equipment of patterns, drawings and machinery. An additional building covering about 30,000 square feet of area will be erected. In this new building the concern contemplate the building of their regular line of water tube boilers, spiral riveted pipe, &c. In addition they will also be in a position to build the Wright engine, which is well known, and will also install the proper machinery for the manufacture of straight riveted pipe and for building, tank, steel stack and flue work.

The New York Subway Construction Company have settled upon a site for the erection of the great central power station which is to furnish the electrical energy for the system. The block between Fifty-eighth and Fifty-ninth streets and Eleventh and Twelfth avenues and the Hudson River was purchased last week for $1,000,000. Now that the site has been selected it is believed that the plans for the power house will be put through immediately. No additional specifications have been issued by the engineers of the company since the award of the contract for the boilers and engines.

The Robinson Mfg. Company of Muncy, Pa., are in the market for a second-hand Corliss engine, as well as equipments for machine and wood working shops.

The Newark Lime & Cement Company of Newark, N. J., are making extensive alterations to their plant, which will involve the construction of a new boiler plant. A 500 horse-power cross compound condensing engine will be required, together with the condensing, pumping and other necessary apparatus.

Bids will be received until October 15 at the office of the Constructing Quartermaster, Delaware City, Del., for the installation of pumping machinery at Fort Du Pont, Del.

Plans are being drawn for a very handsome residence to cost about $100,000 and to be built in the East End, Pittsburgh, by Thomas Lynch, president of the H. C. Frick Coke Company.

Iron and Industrial Stocks.

Except in the United States Steel issues the trading has been rather light, and has not shown any very great fluctuations. The United States stocks were somewhat affected by various reports as to the forthcoming statement, which, when it did appear, made good the claims of those who predicted an extraordinary showing. The car and foundry issues suffered a decline, based upon alleged disappointment in the last financial report.

	Bid.	Asked.
E. W. Bliss, common	140	...
E. W. Bliss, preferred	130	140
Cramp's Shipyard stock	79	82
Empire Iron & Steel, common	4	5
Empire Iron & Steel, preferred	30	35
National Enam. & St., common	25	27
National Enam. & St., preferred	82	85
New Haven	5	5⅛
Otis Elevator, common	31	32
Otis Elevator, preferred	94	96
Pratt & Whitney, preferred	80	90
U. S. Cast Iron Pipe Company, common	6	7
U. S. Cast Iron Pipe Company, preferred	33	35
U. S. Projectile	125	...
Va. C. I. & C., stock	7	8
Va. C. I. & C., bonds	42	44
H. R. Worthington, preferred	117½	120
American Can Company, common	22	22½
American Can Company, preferred	71½	72

New Jersey Zinc Company.—A first mortgage for $10,000,000 was recorded in New Jersey by the New Jersey Zinc Company to the Farmers' Loan & Trust Company of New York in trust to secure the issue of 25-year 4 per cent. gold bonds. One of the conditions is that the mortgagor shall satisfy a first mortgage for $1,700,000, dated February 1, 1897, and given to the Farmers' Loan & Trust Company of New York. This has been done, and the original mortgage was canceled just before the other was filed. The remainder of the money realized from the loan will be used for the purpose of retiring the present outstanding bonds of the zinc company, and to pay for new property and the construction of new plants and for other purposes.

The United States Steel Corporation.—The following financial statement of the United States Steel Corporation since its organization has been made public:

	Net earnings from operation.	
April	$7,356,744	
May	9,612,349	
June	9,394,747	
July	9,580,151	
August	9,810,880	
September (estimated)	9,200,000	
		$54,954,871
Less total of amounts set aside for sinking funds and maintenance		7,059,705
Balance		$47,895,166
Six months' interest on bonds		7,600,000
Balance		$40,295,166
First quarterly dividend on stock, declared July 2—		
Preferred, 1¾ per cent.	$8,895,913	
Common, 1 per cent.	5,061,115	
		13,957,028
Balance		$26,338,138
Second quarterly dividend on stock, declared October 1—		
Preferred, 1¾ per cent.	$8,929,049	
Common, 1 per cent.	5,082,347	
		14,011,396
Balance applicable to surplus or new construction, as the Board of Directors may decide at the end of the year		$12,326,742

The report is signed by Charles M. Schwab, president, and E. Shearson, controller. It will be observed that the dividends required for the second quarter are larger both as to common and preferred, which is due to the fact that additional stock was issued, probably to pay for the Shelby Steel Tube Company.

The net earnings of the American Car & Foundry Company for the four months ending August 31 were $1,086,864.

The Pittsburgh Plate Glass Company of Pittsburgh have practically decided to increase the capital stock of the company from $10,000,000 to $12,500,000. This action will be taken between now and the annual meeting of the stockholders in January. The capital stock of the company is now made up of $150,000 of preferred shares, bearing 12 per cent. dividends annually, and $9,850,000 of common stock, now paying 6 per cent. dividends. It is the intention of the company to issue new stock to the present stockholders at par, every holder of 100 shares and every fraction thereof being entitled to subscribe for 25 shares of the new common stock or every proportionate fraction thereof. The new capital is to be used for working capital. The Pittsburgh Plate Glass Company have been broadening and extending their business for the last year. John Pitcairn, H. C. Frick and A. W. Mellon control the company.

The annual meeting of the stockholders of the Westinghouse Air Brake Company of Pittsburgh was held in Wilmerding, Pa., on Tuesday, October 1. The fiscal year ended July 31. For the year ending July 31, 1900, the company earned gross $8,530,905. Net earnings were $3,519,199; dividends, $3,285,000, and surplus, $231,199.

Dividends.—A dividend of $1.75 per share on the preferred stock of the Washburn Wire Company has been declared, payable October 1, 1901, being at the rate of 7 per cent. per annum for three months from July 1 to October 1.

The Rhode Island Perkins Horseshoe Company declared a quarterly dividend of 1 per cent. on preferred stock, payable October 15 to stock of record October 1.

The directors of the Colonial Land Company of Pittsburgh have declared an initial dividend of 6 per cent. It is payable October 5 to stockholders of record October 1. The capital of the company is $350,000. This concern are an identified interest of the Colonial Steel Company, who will build a crucible steel plant at Monaca, Pa.

The United States Steel Corporation have declared a dividend of 1¾ per cent. on their preferred stock, payable November 6, and 1 per cent. on its common, payable December 20.

The American Car & Foundry Company have declared the regular quarterly dividends of 1¾ per cent. on their preferred stock and ½ per cent. on their common stock, payable November 1. Books close October 10 and reopen November 2.

The Standard Underground Cable Company of Pittsburgh have declared a quarterly dividend of 2 per cent.

Trade Publications.

Wire Rope.—The Hazard Mfg. Company of Wilkes-Barre, Pa., have prepared neat and attractive catalogues in description of their wire rope. These ropes are made of the best brands of Swedish charcoal iron, English crucible cast steel and plow steel wire, the wire being drawn in the company's own mill. The ropes are intended for hoisting, suspension bridges, ships' rigging, derricks, power transmission, cable railways and the like. The company have recently extended their works so as to include the manufacture of insulated electric conductors. This department is equipped with the most modern and improved facilities for the production of insulated wires and cables of the highest grade.

Hydraulic Jacks.—Catalogue 61 by the Watson-Stillman Company of 204 East Forty-third street, New York, deals with their hydraulic jacks, which are made in an almost endless variety of patterns adapted for every conceivable purpose. In their improved hydraulic jacks the head and interior tube or arm form a reservoir through which the filling flows to the pumps and to which it is returned in lowering. From the pump it is forced by the downward stroke of the piston past the lower valve into the cylinder, and, as this is closed at the bottom, the arm rises to provide space for the water. The lever, which is made with a projection on one edge, slips into a socket at the side of the head. This socket passes through an arm in the interior of the head, and to this is fastened the piston of the pump. The power is determined by multiplying together the weight of the operator, assumed to be 150 pounds, the proportions between the arm and the lever and that of the pump and cylinder. The machines are rated low enough, so that one man can easily raise the weight for which they are designed. The speed of lifting is inversely proportioned to the amount lifted. Ten tons can be lifted 1 foot in about a minute and a half; 100 tons in 15 minutes. The

old style solid inflexible ring packing of the socket, which was very difficult to introduce or keep tight, has been done away with, and in its stead has been introduced, behind the socket, a lubricated packing and gland or stuffing box, thus retaining the flat lever which has been one of the characteristics of this style jack. This packing may be removed without taking the jacket entirely apart. Flexible cup packings are used which the pressure tends to tighten.

Millers for the Metal Trades.—The Kempsmith Mfg. Company, Milwaukee, Wis., have just issued catalogue No. 13, which gives full particulars relative to the line of milling machines which they manufacture. These comprise hand millers, screw feed, rack feed, back geared, double back geared and automatic feed plain millers, universal millers and geared millers. In every instance the machine is illustrated, and very complete specifications are given which enable the reader to thoroughly understand the construction of the tool and its special features and advantages. Illustrations are also given showing certain operations to which the machine is adapted and which are of practical value to machinists. A considerable portion of the catalogue is devoted to attachments which have been designed for application to Kempsmith millers, as, for instance, a high speed milling attachment for taking light cuts, a vertical milling attachment having also a rack cutting spindle, an angular milling attachment, a circular milling attachment with automatic or hand feed, a vise for rack blanks to be clamped to the table of the miller, plain index centers, universal index centers, &c. Additional attachments not yet ready for illustration are in process of construction. The catalogue states that in the development of the company's business the plant has been completed with numberless mechanical devices for the accurate machining and duplication of every piece entering into the construction of their milling machines. Even the smallest screw is produced in their own factory. It is their aim to always make a miller that is properly designed, accurately constructed and attractively finished. The book is a beautiful specimen of catalogue work, the illustrations being photographic reproductions.

Pneumatic Tools.—A large pamphlet by the Chicago Pneumatic Tool Company deals with their many pneumatic appliances. The factories of this company are equipped with the most modern and improved machinery for the manufacture of these tools, and are, perhaps, the largest and most elaborate of the kind in the world. Many illustrations are presented which show the tools themselves separately, and also as in actual operation on work of widely varying character, such as riveting, calking, chipping, drilling, &c.

Drawirg Presses and Spinning Lathes.—We have received from the E. W. Bliss Company, 11 Adams street, Brooklyn, catalogue describing several of their types of drawing presses and spinning lathes. Their spinning lathe No. 3 is specially adapted for lamp shells, small tinware, brass goods, &c., and may be used for spinning, trimming, wiring and beading operations. Their No. 6 lathe is provided with compound rest, antifriction burnisher, tilting rest, trimming and wiring attachments complete, as it is to be used for finishing up seamless drawn tin and sheet iron work, such as taper pans, wash basins, plates, and the like. The work can be spun, trimmed and wired at one setting of the movements, the devices being so arranged as to work rapidly and accurately.

The Westinghouse Companies.—An interesting work has been prepared by the Westinghouse companies, dealing with the several constituent organizations which combine to make this mammoth establishment. The vast extent of this organization will be appreciated by all those who consult the pamphlet. This publication was designed for distribution from the exhibits of the company at the Pan-American Exposition.

Fly Wheel Insurance.—The Fidelity & Casualty Company, 97 Cedar street, New York, are issuing policies covering users of engines against loss when persons are killed or injured by the disruption of fly wheels, and also against damage to property whether that of the assured or of third parties for which the assured is liable.

Steam Hot Blast Apparatus.—B. F. Sturtevant Company, Boston, Mass., in their catalogue No. 118 describe many types of steam hot blast apparatus. The introduction of this device, over 30 years ago, by the Sturtevant people marked a distinct departure in the method of heating, ventilating and drying. It has since been developed, until it can be readily built in any proportions and adapted to the most peculiar requirements. The great diversity in sizes and arrangements is one of its essential features. The entire heating surface is massed in a fire proof casing in connection with the fan which can be driven by belt, engine or motor as may be desired. If by an engine the exhaust therefrom can be utilized in the heater. The heated air is forced just where it is wanted, not merely allowed to go, positive circulation and ventilation being thus assured. The action is entirely independent of the weather, and may be varied at will.

Steel Pressure Blowers.—The Buffalo Forge Company, Buffalo, N. Y., have prepared a small pamphlet illustrating their line of Buffalo steel pressure blowers. The various types are fully illustrated and described. In addition full tables of dimensions, speeds and capacities of the blowers are presented. It is a very neat and handsome pamphlet in which any one interested in the application of blowers for forced draft, cupola blowing, or like service, will find much valuable information.

The Dodge Mfg. Company of Mishawaka, Ind., have prepared a pamphlet dealing with their adjustable ball and socket drop hangers, counter shaft fixtures, post boxes, split friction clutch, cut off, shaft couplings, friction clutches, &c.

An Antique Hardware Invoice.

An invoice of assorted Hardware, dated New York, June 29, 1824, for merchandise billed by James G. Haviland to Samuel Hutchings & Co., Waterford, Pa., was recently sent us by Frank E. Ensworth of the same town, who deals in Hardware and allied goods. Evidently at that period money was not spent on printed stationery, the bill being a four-page sheet of folded foolscap and entirely manuscript. The invoice appears to be a comprehensive one of about 200 items in very moderate quantities. Some of the leading goods are Table Knives and Forks, Shoe, Bread and Pocket Knives, Shears and Scissors, various kinds of Files, Chisels and Saws, Gouges, Plane Irons, Table Spoons, Latches, Candlesticks, Snuffers, Locks, Butts, Ink Stands, Spectacles, Bits and Braces, Compasses, Drawing Knives, Toilet and Curry Combs, Chains, Razor Strops, Glass Beads, Watch Seals, Violin Strings, Shovels, Steelyards, Snaps, Gun Flints, Tacks and Brads, Knitting Pins, Needles, Thimbles, Oil Stones, Boot Webbing, Buckles, Snaffles, Stirrups, Men's and Women's Trees, Jewsharps, Tin, Pumice Stone and other goods of similar character. Approximate idea of the prices prevailing then is afforded by comparing the total value of merchandise, £226 17s. sterling (equivalent to about $1100), with the number of packages—namely, two casks, two bundles Shovels and Spades, one bundle Pans, three boxes Tin and one box Sundries. Although the weight of the shipment is not known the packages were evidently not heavy on account of the primitive transportation facilities, there being no railroads in this country until 1826, while the first boat through the Erie Canal only arrived in New York, November 4, 1825, or 16 months later, which, if then in operation, would be a convenient way of shipping to Waterford. Some of the articles which offer a basis for price comparison in detail are:

Wood Screws, ⅝ and ¾, No. 7, 43 cents and 48 cents per gross respectively.
Wood Screws, 1½-inch.....$0.92 per gross.
4½-inch Hand Saw Files..... 1.68 per dozen.
Plane Irons, 2¼-inch..... 4.45 per dozen.
Thumb Latches..... 1.44 per dozen.
Table Butts, 1¼-inch..... .96 per dozen.
Table Butts, 1½-inch..... .48 per dozen.
Drawing Knives..... 9.00 per dozen.
Scythe Stones..... 1.44 per dozen.
200-pound Steelyards at the rate of.....31.68 per dozen.

HARDWARE.

THE CONSOLIDATION OF JOBBING INTERESTS.

THE question of consolidation among the jobbing trade continues to be a topic of engrossing interest among manufacturers and merchants. It is known that efforts in this direction are being made, and some of the facts in regard to the matter are coming to light, but in the main the whole thing is invested with an air of uncertainty and mystery which permits a great deal of conjecture in regard to the actual features of the scheme. There is also much discussion over the question as to the feasibility of any such project. Notwithstanding the fact that some men of prominence and ability are supposed to be active in the consolidation enterprise, the general feeling expressed by men whose judgment is entitled to weight is that an attempt to bring the jobbing trade together into a huge organization in any way that would give reasonable promise of successful operation is quite impracticable, and the project, as referred to in most of the public statements in regard to it, is characterized as visionary.

Whatever may be the outcome of the effort, the attention of the trade is thus brought to the fact that something in the way of consolidating jobbing interests is perhaps feasible. That there are an unnecessary number of jobbing houses is conceded, and the competition between them is such as to make it a difficult matter, under existing methods of distributing Hardware, for them to realize anything beyond moderate profits, and in order to do this they must be given very efficient management. Even then the general course of the market has much to do with their success, which depends in too large a measure upon whether goods in their hands rise or fall in price. It is, however, exceedingly doubtful if anything in the way of consolidation is going to seriously diminish such competition. There is, perhaps, no reason why some of the competing houses should not join forces, and thus, perhaps, gain something in the way of economy and improved position. But in all this it must be remembered that no organization or artificial arrangement of any kind can be relied upon to make success in business. With the jobbing trade, as with every manufacturing and mercantile interest, the prime requisite is ability in management, which recognizes existing conditions and takes advantage of them with adequate skill and energy.

AN ASSOCIATION OF HARDWARE MANUFACTURERS.

All the indications point to a large gathering of manufacturers at Cleveland next week, to attend the meeting of the National Hardware Association, and the number will doubtless be increased by the call which has been issued for a meeting of manufacturers to consider the advisability of organizing a Hardware Manufacturers' Association. Both the retail and wholesale trade are looking after their own interests more systematically and efficiently than ever before, and the various associations are undoubtedly advantageous to the classes of trade which they represent. There is certainly equal reason for the formation of a Manufacturers' Association. Their interests and rights are sometimes overlooked or inadequately appreciated by merchants, wholesale and retail, and unreasonable demands are thus not infrequently made upon them. With an organization they would obviously be in a better position to meet anything like dictation or to work together for the introduction of reforms in trade usages which for the advancement of their own interests or perhaps for the welfare of the trade as a whole are desirable. There are too many matters in which manufacturers have a common concern which would properly come within the scope of such an organization, such as terms of sale, classifying the jobbing and retail trade with reference to prices, questions concerning freight rates, and classification, deliveries, &c. Besides this such an association could undoubtedly do much in the direction of educating the less experienced manufacturers in proper business methods in the distribution of their product, thus affording in the manufacturing field a parallel to what has been accomplished by the associations of both jobbers and retailers which have found a very important part of their usefulness in the influence they have been able to exert on merchants who required to be taught sound principles of business management. With the recognized ability of the Hardware manufacturers and the great interests they represent an exceedingly strong and influential organization might be effected which would command the respect and advance the interests of the trade at large.

There is a sense in which each class of trade is obliged to look out for itself. Thus retailers, jobbers and manufacturers are expected to do what is primarily and often almost exclusively for their own advantage, however diplomatically it may be expressed for the welfare of the trade in general. There should, however, be a full and hearty recognition of the rights and interests of the other branches of the trade. While the manufacturers have sometimes been annoyed by unreasonable requests which amounted almost to dictation, it is to be presumed that if the organization should be effected among them they would avoid making a similar mistake in their relations with the trade.

Condition of Trade.

While business continues in excellent volume there is something of a lull in the demand made upon the manufacturers by the jobbing trade, whose requirements for the opening season have been liberally provided for. Reports from the retail trade indicate that trade with them is generally satisfactory, with the prospect that the next few months will be characterized by a large business, especially in holiday goods, a line to which many merchants will give more attention this year than ever before. The scarcity in some lines to which attention has been directed in recent issues still continues, as well as the uncertainty as to the future prices of others in which the formation of consolidations or combinations has resulted in the building up of outside competition, which threatens to become troublesome. The tone of the market, however, all things considered, is satisfactory. The meeting of the National Hardware Association at Cleveland next week is attracting a good deal of attention, as well as the endeavor on the part of a number of well-known manufacturers to form an organization at the same time. Another topic which is much discussed in trade circles is the project for the consolidation of jobbing interests, some of the phases of which are referred to elsewhere.

Chicago.

(By Telegraph.)

It is unusual for anything checking business to be acceptable. The warm weather of the past week, however, caused a welcome break in the heavy demand for winter goods. These goods are so scarce that a feeling of relief was experienced when the pressure abated as a result of the milder weather. If the next cold snap defers its appearance for a week or two it will enable the trade to be somewhat better supplied. The scarcity of

goods continues in all classes of articles made of Tin Plate and Steel Sheets. Dinner Pails are in extraordinary demand because of the prosperous condition of the country, which has brought about the full employment of laboring men. The demand for Hardware generally keeps up very well, the volume of business being about as heavy as in preceding months. The movement of Nails and Barb Wire is somewhat larger and the supply of Woven Fencing is below the requirements of the trade. The outlook continues very promising for the remainder of the year. No unfavorable indications are yet in sight. Prices are firmly maintained and the strength in Crude Iron and Steel allays apprehension regarding the immediate future. Heavy Hardware jobbers are experiencing decided scarcity in lines which they handle. Such articles as Bolts and Horseshoes cannot be accumulated in stock. Shipments from factories are being sold before they arrive here. Collections were never better, showing that money is abundant in the country.

St. Louis.

(By Telegraph.)

It is the general opinion with the leaders in the trade that the market is fully up to expectations, and by some a more enthusiastic feeling is manifested. Before August 1, when the serious phase of the drought was most acute, an uncertain feeling as to the future did prevail, but as soon as relief in the form of rain came the steady and rapid improvement set in, which has continued without interruption. New records for volume of business are being made continually and there seems no plausible reason why these conditions should not hold for the balance of the year. No one line of specialties has to be singled out to call especial attention to, as the demand is heavy in all lines. The far sighted ones in the trade, whose plan it has been to enlarge the field of their salesmen, are now reaping the benefit from their expansion policy, as they have in this way more than made up for the loss in trade in the sections which were most affected by the crop failure. Complaint is still heard on account of the scarcity in certain lines, especially in Galvanized and Tinned Sheets, Bale Ties, Tin, Enameled Ware and Axes.

Boston.

BIGELOW & DOWSE COMPANY.—What nation in the world could have withstood the shock of the assassination of its head with so little effect on finance and general business as has this great country of ours?

The wheels of industry and commerce have never stopped except for one day, devoted to universal mourning, and that day will be long remembered, for the whole nation grieved and every one felt the loss of a dear friend.

To-day the flags at half mast are a reminder of the past, else one visiting the busy marts of trade would find no trace of any bad result from an event that might have brought panic and destruction widespread.

General business will show a handsome gain for the month over last year. Everything looks cheerful in a business way. Prices show no weakness. There is a shortage of raw material at many of the factories, which prevents prompt deliveries. There seems no reason why present prices should not be maintained through the fall trade, notwithstanding some anticipate advances.

There is a lively interest in the meeting of the National Hardware Convention at Cleveland next week. There will be a large delegation from New England and an unusual number of the delegates will be accompanied by their wives.

Baltimore.

CARLIN & FULTON.—From all reports the month of September has been generally satisfactory as to trade. Favorable weather conditions have stimulated buying, and our city has been favored by the visits of a great many merchants from our Southern market. In many lines of goods, as stocks are depleted it seems difficult to obtain prompt shipments from the manufacturers, and no doubt the effects of the long continued strike will be felt for some time to come, provided business keeps up anywhere near its present volume.

This section has been especially favored with a good corn crop, which at present prices will help the farming community and necessarily benefit business generally, while the present price for cotton is also good through the result of a diminishing crop.

While sales have been, no doubt, very generally large, money will scarcely be in abundance until the crops have been marketed, which will require some few weeks yet. All indications point to a continued good trade for the balance of the year, as well as we can judge.

San Francisco.

MILLER, SLOSS & SCOTT.—The situation on the coast is much improved over the last few months. The threatened tie up by the strikers of the commerce of San Francisco has resulted in some inconvenience and loss, but at the present writing the places of the striking stevedores, longshoremen, coal and lumber handlers, sailors and teamsters have been in a large measure filled, and business is going on in about the same manner as before the strike, and it will be only a short time before business will be on a firmer and better basis than ever.

The demand for Hardware is good, particularly in the building line, as a great many buildings are going up in San Francisco and elsewhere on the coast.

Grain is now moving freely, and as there is a big crop with fair prices, this will loosen up the money market and make collections better.

Louisville.

W. B. BELKNAP & CO.—The market is in a satisfactory condition. The demand for goods seems to be well up to or more than the production, so that the pulling movement, which is always pleasanter than the pushing movement, is still the prevailing one.

The revelation of the earnings of some of the large industrial companies in the publication of their annual statements is only bringing to light what people must have felt would be exposed sooner or later—viz., that the enormous sum paid for plants over their true replaceable value in the process of combination or consolidation has to be squeezed out. The Steel people have had exceptional years in which to do this, and we believe that the healthy process of charging off has been pushed as far as the insiders could bring themselves to do, consistent with paying the comfortable salaries meantime. Whether this is enough to leave dividends for the stockholders will be an individual matter with the different combinations. But for the time being it has cooled the ardor of those who would be forming new combinations at any cost, and also the investment of the public in any stock, either common or preferred, in such organizations. In fact, there will be the same difference between these combinations that there was between the individual companies. Those that are well managed will pay; those that are extravagant will have to give in their final accounting.

Railroad earnings continue good and the industries of the country are certainly well employed.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—Several things have occurred this summer and early fall that would ordinarily disturb the regular course of business very much. Among these we would mention six weeks of drought, followed by five weeks of rain, which amounted almost to a flood, this covering a large portion of the territory tributary to Nashville. This followed by the assassination of our President, which would in ordinary times create some disturbance in financial circles. Notwithstanding all these hindrances trade has come along regularly as usual. In fact, we believe that the jobbers who have been pushing the business in an aggressive way have secured a large increase over former years.

We have had a firm market all along, which has aided us very materially. The advance this week of 50 cents on Southern Pig Iron has had a tendency to stiffen up prices on staple goods, and further advances on Merchant Bar and other lines near to raw material are looked for.

We are also pleased to advise that collections are as good as usual at this season of the year.

The tobacco crop in this section is excellent, and as the trade desire. Concessions in prices are made at reported. We think the prospects are good for a heavy fall business.

Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—In its general features this market presents no changes of importance. There is a constant and steady demand for goods, both from the agricultural and mining districts, so that jobbers are well satisfied with the present conditions as well as the future outlook. There appears to be plenty of money in circulation, and as the general prosperity has brought about a large expansion in the consuming power of the masses, the retail trade of this trans-Missouri region has received its share of the benefits.

Advices from traveling representatives and reports by visiting merchants who have been present in the market during this month all tend to substantiate the statement that the country tributary is in a very prosperous condition, and as long as there is plenty of business in sight little fear need be entertained for any adverse changes.

St. Paul.

FARWELL, OZMUN, KIRK & CO.—There is little of special importance to the trade to note. Just now, as is often the case, the weather is the most important factor. Nor is this year an exception, for very frequently at this season there is even more anxiety about the saving of the crops than there was at an earlier date concerning their growth. This applies particularly to North Dakota and Northern Minnesota. In that territory the average farmer expects to let his grain stand in the shock till it can be threshed, and between the delay in getting the thresher at the job and also from the unfavorable weather that is frequently experienced at this season, winter is liable to be on with the grain still in the field. Or, if it has been threshed, it comes to market in damaged condition, and has lost some in actual value, and it will probably suffer still more heavily from the opportunity that is thus afforded the elevator people to mark its value down still lower, and also to take out dockage. Thus the aggregate loss to the Northwest in some years has amounted to many millions of dollars.

We have just now been going through the earlier stages of one of these experiences, and have now reached the point at which it is necessary to have good weather or serious loss will ensue. In the territory named about 50 per cent. of the grain is yet in the shock, and the weather for the past three weeks has been very unfavorable. We have now the prospect of better weather, and if it is realized and a month of favorable weather is given the crop will be saved, though some of it in damaged condition. The most provoking part of it is that the farmers could save themselves and others from much of this anxiety and loss if only they would bend every energy to save their crops when harvested. But the grain farmer of the Northwest is a very hopeful man, and takes many chances on his year's labors from first to last, and he is slow to change his methods. Probably the only time he ever thinks seriously of changing his way of neglecting to save his crops is while it is raining, and when the sky clears up he is again the same hopeful, Micawber-like being that he was before. If he were out of debt this would be mainly his own concern, but generally he has been tempted to buy land beyond his present means, and then to put in a proportionate crop and as a result he owes his merchant, and the latter in turn owes the wholesale dealer, and so all are linked together.

The evil will gradually be cured, just as it has been in Southern Minnesota, by more diversified farming and by caring better for what is raised. September will fall some below August in volume of Hardware trade, but it is a good month's business, and the balance of the year will be very satisfactory, if the weather conditions come on as they now promise.

NOTES ON PRICES.

Wire Nails.—The demand throughout the country for Wire Nails is large. Manufacturers have increased their facilities, but are not making as prompt shipments as the trade desires. Concessions in prices are made at competitive points. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots	$2.30
To jobbers in less than carload lots	2.35
To retailers in carload lots	2.40
To retailers in less than carload lots	2.50

New York.—Demand for Wire Nails has fallen off temporarily during the past week, which is not unusual at the end of the month. The new tenement law is expected to curtail building operations in this direction and incidentally to affect the local consumption of Nails. Quotations are as follows:

To retailers, carload lots on dock	$2.53
Small lots at store	2.60

Chicago, by Telegraph.—The largest manufacturers of Wire Nails are not yet making prompt shipments on orders, although their output is the greatest in their history. The condition of stocks is shown by the great difficulty encountered in filling any slightly increased demand for Nails of sizes a little out of the ordinary. Jobbers report heavier demand from stock. Prices are maintained at $2.45 for carload lots and $2.50 for small lots.

St. Louis, by Telegraph.—The demand is good in the Wire Nail market and prices are well maintained. We quote carload lots to retailers at $2.50, base, and less than carload lots at $2.55 to $2.60.

Pittsburgh.—There is only a fair demand for Wire Nails and competition for desirable orders is more keen than for some time. There is more independent Wire Nail capacity in the market now than at any time in the last two years. On large orders and at competitive points material concessions in prices are being made. At other points that are not competitive established prices are being pretty firmly held. We quote, f.o.b. mill, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots	$2.30
To jobbers in less than carload lots	2.35
To retailers in carload lots	2.40
To retailers in less than carload lots	2.50

Cut Nails.—No change in the price of Cut Nails was made by the manufacturers at their meeting last week, but existing prices were reaffirmed. Scarcity of Steel is still an annoyance contended with in the production of Nails. Reports point to some irregularity in prices. Quotations are as follows, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots	$2.05
Less than carload lots	$2.10 to 2.15

New York.—The local Cut Nail market remains unchanged in general features. New York quotations for carload and less than carload lots are as follows:

Carload lots on dock	$2.18
Less than carload lots on dock	2.23
From store	$2.18 to 2.30

Chicago, by Telegraph.—A good movement in Cut Nails is reported by jobbers. The demand in this line has lately been increasing. Small lots are still held at $2.35.

St. Louis, by Telegraph.—The Cut Nail market rules about the same, with a fair demand and a steadiness in prices. Small lots from store are quoted from $2.30 to $2.35.

Pittsburgh.—Demand for Cut Nails is not as heavy as it was a month or two ago. The tone of the market is only fairly strong and concessions in prices are being made, mostly in the direction of a lower delivered price, the mill absorbing part of the freight. We quote for domestic trade, f.o.b. Pittsburgh, plus Tube freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots	$2.05
Less than carload lots	2.10

Barb Wire.—The Eastern requirements for Barb

Wire are moderate, as it usually is at this season. The demand on Western mills is large, showing an increase over that of the preceding months. To points where competition is strongest concessions are made in price. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots, Painted	$2.60
To jobbers in carload lots, Galvanized	2.90
To jobbers in less than carload lots, Painted	2.65
To jobbers in less than carload lots, Galvanized	2.95
To retailers in carload lots, Painted	2.70
To retailers in carload lots, Galvanized	3.00
To retailers in less than carload lots, Painted	2.80
To retailers in less than carload lots, Galvanized	3.10

Chicago, by Telegraph.—The Barb Wire production of the leading manufacturers is now 25 per cent. greater than in the spring months. Better deliveries are therefore being made. Specifications are running heavier than in August. Jobbers are receiving better shipments from manufacturers and are consequently handling their trade with a little more satisfaction. The supply of Woven Fencing has for some time been considerably under the demand, and the manufacturers are much in arrears in making shipments on contracts. Manufacturers are making preparations to increase their output during the winter months and expect to be in much better shape to supply the spring trade. Carload lots are quoted at $2.75 for Painted and $3.05 for Galvanized. Less than carloads are quoted $2.85 and $3.15 respectively, with these prices firmly held.

St. Louis, by Telegraph.—The Barb Wire market continues in a very satisfactory condition, inquiries and orders being on a fairly liberal scale. There seems to be an inclination to avoid carrying very heavy stocks. Jobbers quote carload lots of Painted at $2.85 and Galvanized at $3.15; less than carload lots at $2.95 for Painted, $3.25 for Galvanized.

Pittsburgh.—There is a satisfactory demand for Barb Wire and the market is fairly strong. It should be noted, however, that slight concessions in prices are being made for desirable orders, and at competitive points. For domestic trade we quote: Galvanized Barb Wire, $2.90 in carload lots to jobbers, and Painted, $2.60. Terms 60 days net, 2 per cent. discount for cash in 10 days, f.o.b. Pittsburgh.

Plain Wire.—There are no changes in the Plain Wire market, business continuing heavy. Mills have not succeeded in catching up with orders. Some unevenness in prices are reported to competitive points. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

Base sizes.	Plain.	Galv.
To jobbers in carload lots	$2.25	$2.65
To jobbers in less than carload lots	2.30	2.70
To retailers in carload lots	2.35	2.75
To retailers in less than carload lots	2.45	2.85

The above prices are for the base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

6 to 9	Base				$0.40	extra.
10	$0.05	advance	over	base	.40	"
11	.10	"	"	"	.40	"
12 and 12½	.15	"	"	"	.40	"
13	.25	"	"	"	.40	"
14	.35	"	"	"	.40	"
15	.45	"	"	"	.75	"
16	.55	"	"	"	.75	"
17	.70	"	"	"	1.00	"
18	.85	"	"	"	1.00	"

For even weight bundles, 50 pounds and over, 5 cents per bundle advance on above.

Chicago, by Telegraph.—Manufacturers are still from three to four weeks behind on deliveries. Heavy sales of Baling Wire are being made, and Bale Ties are still extremely scarce. Carload lots of Wire are held at $2.40 and small lots from stock at $2.50.

Pittsburgh.—Demand continues moderately heavy and the mills are able to ship their output of Wire about as fast as made. The tone of the market is fairly strong, but, as in the case of Wire Nails and Barb Wire, slight concessions in prices of Plain Wire are sometimes made for desirable orders and at competitive points. For domestic trade we quote:

To jobbers in carload lots	$2.25
To jobbers in less than carload lots	2.30
To retailers in carload lots	2.35
To retailers in less than carload lots	2.45

Galvanized Wire up to No. 14 is 40 cents advance on Plain; Nos. 15 and 16, 75 cents advance, and Nos. 17 and 18, $1 advance. Terms are 60 days net, with 2 per cent. off for cash in 10 days, f.o.b. Pittsburgh.

Loaded Shells.—The members of the Ammunition Association are several weeks behind in filling their orders for Loaded Shot Shells, because of the unexpected and very heavy demand. The result is that all buyers of these goods, wholesalers and retailers, even those who generally lay in their supplies early, are greatly inconvenienced. As a result, jobbers who have goods to sell are holding them more firmly. The various factories are working night and day to execute their orders, but apparently are not improving the condition any. Many dealers think manufacturers should carry a stock in anticipation of such conditions, but a little reflection will show the impossibility of this when the multiplicity of loads, with the different gauges, quantities of powder, and sizes of shot, both soft and chilled, are considered, which is further complicated by the existence of half a dozen or more brands of powder. The manufacturers say there are not less than 1000 distinct staple varieties of Loaded Shells, and several thousand combinations in all are more or less called for. While the same difficulty has often occurred before, it is said to be worse than ever now.

Cordage.—The Rope market is stiffer and higher prices generally rule. Manufacturers have advanced Manila Rope, basis of 7-16-inch and larger, to 10¾ cents per pound. Some allow ¼ cent rebate in large lots. Sisal Rope, on the same basis, is quoted from 8½ to 9 cents per pound, these prices being subject to ¼ cent rebate for large lots by some manufacturers. At the lower prices makers are not soliciting orders and are not making Rope in advance of requirements. The high price of Sisal Rope is affecting its sale, and buyers are ordering Jute Rope as a substitute. On a basis of ¼ inch and larger, No. 1 Jute thread Rope is quoted at 6½ cents and No. 2 at 6 cents. Jute Yarn Rope, on the same basis is quoted at 5½ to 5¾ cents per pound.

Glass.—An improvement in the demand for Window Glass is reported, though it is not large. Stocks are being gradually reduced in jobbers' and manufacturers' hands, and are expected to be pretty well cleaned up by November 1, when factories are scheduled to begin operations. A few factories have already gone into blast, representing a capacity of between 200 and 300 pots. Jobbers' quotations are as follows:

	Discount.
Less than car lots, from store	80 and 20 %
Carloads, f.o.b. factory	85 and 5 %

Oils.—*Linseed Oil.*—Prices of Linseed Oil remain unchanged. Business is confined to small lots because of a scarcity of Oil and a feeling that prices cannot long be maintained at the present level. It is thought that no relief can be expected before the middle of the month, as it is questioned whether Oil on October contracts will be delivered promptly. Those who are depending upon contract Oil may be obliged to supply their wants temporarily in the open market. Quotations are as follows, according to quantity:

	Per gallon.
City Raw Oil	65 to 66c.
Out of town Raw Oil	65 to 66c.

Boiled Oil 2 cents per gallon advance on Raw.

Paints and Colors.—*Lead.*—Demand for White Lead in Oil is good, if not up to expectations. It is reported that business in this line is in excess of the corresponding time last year. Irregularity in prices are reported, but no change has been made in quotations, which are as follows: In lots of 500 pounds or over, 6½ cents; in lots of less than 500 pounds, 7 cents per pound.

Spirits Turpentine.—The Turpentine market is firm at ruling prices. Receipts at Southern points show some

falling off as usual at this time. In the local market large consumers are not willing to pay present prices, and a moderate business is being done in small lots. Quotations, according to quality, are as follows: Southerns, 36½ to 37 cents; machine made barrels, 37 to 37½ cents per gallon.

The Proposed Consolidation of Jobbing Interests.

THERE continues to be a great deal of speculation throughout the trade in regard to the rumored movement for the bringing together of the jobbing houses into a huge consolidation. There is no doubt that efforts are being made to the extent of obtaining options from a number of jobbers, on terms which are not announced. The matter has also been presented to other houses, who have not given it their approval and have turned it down or are holding it under advisement. It is difficult to obtain definite information in regard to the details or even the general scope of the enterprise, but something of the methods pursued is indicated in the following form of contract, under which options are sought by the party who is actively promoting the project:

Form of Agreement Giving Option.

AGREEMENT made this ..... day of....., 1901, between ....., hereinafter called the "Vendor," party of the first part, and ..... hereinafter called the "Purchaser," party of the second part.

Said parties, each in consideration of the agreements of the other herein stated, and said Vendor, in consideration further of the sum of One Dollar, receipt whereof is acknowledged, mutually agree as follows:

VENDOR AGREES:

1. To sell and convey to Purchaser by sufficient bills of sale and instruments of transfer, free and clear of liens and incumbrances, and with the written consent of all stockholders of Vendor (unless such sale will in the opinion of Purchaser's counsel be valid without such consent), all merchandise, fixtures, machinery, tools, equipments, appurtenances and accessories, patents, patent rights and licenses, trade-marks, trade name, rights, good-will, privileges and franchises, including rights under leases and contracts, and all other property and assets (excepting only land, buildings, structures, cash in bank or on hand, bills and accounts receivable) now held, owned or possessed by Vendor, or that may be acquired before delivery pursuant hereto, excepting such merchandise or materials as in the usual course of business shall be sold and delivered before such delivery (including all the property of every kind specified in the schedule hereto annexed), and to deliver all such bills of sale, assignments, transfers, property and assets to Purchaser ten days after demand made on or before the first day of January, 1902, upon payment to Vendor by Purchaser of the price hereinafter stated.

2. To deliver to Purchaser within ten days after demand complete inventory of merchandise and other property to be bought.

3. That upon transfer and delivery of the properties herein agreed to be sold, provision shall be made by or on behalf of Vendor, satisfactory to Purchaser, that all debts and liabilities of Vendor shall be promptly paid and discharged, and that Vendor shall presently thereafter be legally wound up and dissolved, or that all its capital stock shall be turned over absolutely to Purchaser.

4. That an examination of the books and business of Vendor may be made for Purchaser by public accountants chosen by him, and that all records, books and papers pertaining to the business, including condition and pricing of merchandise and other assets, as well as to its corporate organization and history, may be examined by Purchaser's representative and counsel.

5. That upon payment of the purchase price, hereinafter stated, Vendor will cause to be delivered to Purchaser an agreement or agreements by such of the officers, stockholders and managers of Vendor as shall be designated by Purchaser, in and by which they, and each of them, shall covenant that they will not during the term of .....years from date, ..., engage in or carry on, directly or indirectly, or be engaged, concerned or interested in carrying on, either solely or in partnership, or as agent or stockholder or otherwise, or permit their names to be used or employed in carrying on, or in connection with, the business of merchandise or selling hardware, except in connection with the Purchaser or with the Company which may acquire from him the properties hereinbefore agreed to be sold, or its successors.

6. That the business of the Vendor shall be conducted by its officers in the same manner as heretofore during the pendency of this agreement, but no unusual contracts shall be entered into. All such repairs as would usually be made shall be made during said period, and, generally, said property or business shall not be depleted or injured by Vendor or by any cause within its control during said period.

PURCHASER HEREBY AGREES:

7. That, upon performance by Vendor of all the agreements hereinbefore contained to be performed by it at and prior to the time of the conveyance and delivery of the property hereby contracted to be conveyed and delivered, the Purchaser will pay to Vendor, as purchase price, on or before the first day of January, 1902, at the office of Reed, Simpson, Thacher & Barnum, in the city of New York, the further sum of ....Dollars ($.....) in cash, and will also then and there pay to Vendor, as further purchase price, in cash, fifty per cent. of the estimated value of the materials, supplies, ... then owned and possessed by Vendor and so transferred to Purchaser; and Purchaser will then deliver to Vendor agreement or agreements that an inventory and appraisal shall thereafter be promptly made, with the assistance of some representative of Vendor, of all such materials, supplies, ..., and that, upon completion and verification thereof, Vendor will pay the balance, if any, established by such inventory over and above the fifty per cent. aforesaid of such estimated value, Vendor to simultaneously deliver agreement binding it to pay back the excess, if any, of such fifty per cent. of estimated value over the valuation so established by said inventory, and Purchaser will also then deliver to Vendor agreement or agreements reasonably providing for the completion of unfinished contracts, binding upon Vendor for manufacture and sale of product, or for purchase of materials and supplies.

VENDOR AND PURCHASER HEREBY FURTHER AGREE AS FOLLOWS:

8. That the valuations of materials, supplies, ...hereunder shall be as follows:

9. In case any of the property herein agreed to be sold shall be destroyed or injured by fire or otherwise, prior to delivery thereof to Purchaser, pursuant hereto, Vendor may either restore said property to as good condition as before, or may turn over to Purchaser sufficient funds for that purpose.

10. In case any difference or dispute shall arise between the parties hereto in respect to the interpretation or carrying out of this instrument or any of its provisions, including the valuations of material, supplies, ..., aforesaid, such dispute or difference shall be settled as follows: Each party hereto shall appoint one arbitrator or appraiser, and the two so chosen shall select a third. The written award or decision of a majority of such arbitrators shall be final and conclusive. Such appointment by a party hereto shall be made within ten days after written notice to such a party by the other requiring such appointment, and the failure of either party to so appoint shall authorize the other party to make an appointment for the one so in default. The two appointees of the parties shall select a third arbitrator or appraiser within five days after their appointment, and if they fail, or are unable to do so, then any Judge of the Supreme Court of New York, for the First Department, upon application of either of the parties hereto, is hereby authorized to appoint such third appraiser or arbitrator. An award shall be made by the appraisers or arbitrators within fourteen days after the appointment of the third thereof.

11. All covenants, agreements and provisions herein stated shall apply and inure to and bind the heirs, executors, administrators, successors and assigns of the parties, respectively.

12. It being the intention of the Purchaser to acquire other plants, properties and businesses similar to those herein agreed to be sold, if he shall not acquire the same

to the extent or upon terms satisfactory to him, he shall, at his option, be released from all liability and obligations hereunder, whereupon the Vendor shall likewise be released.

IN WITNESS WHEREOF, hereunto Vendor has caused its corporate seal and the signature of its ..... to be affixed, and Purchaser has set his hand and seal, the day and year first above written.

DIFFICULTIES IN THE WAY OF THE CONSOLIDATION OF JOBBING INTERESTS.

THE following letter has been addressed to their clients by Oliver Brothers of New York, who are buyers for many jobbing houses throughout the country, and have taken pains to look carefully into the efforts which are being made to effect the proposed consolidation. The communication will be of exceptional interest as discussing the project in some detail and pointing out forcibly some of the considerations which militate against its success:

Some of our friends among the jobbers have suggested that we issue a letter to our clients expressing our views regarding the question of consolidating the interests of various Hardware jobbing houses throughout the country. We have thus far refrained from doing so, thinking some of our clients might regard our remarks as either presumptuous or inimical to their interests, but we now judge that the majority would be interested in our views on the subject, as follows:

The plan, as commonly reported, is to organize a company, who for convenience we will call the National Hardware Jobbers' Corporation, with a capital of about $100,000,000, or more, with headquarters at New York, to control and manage the business of the majority of the large Hardware jobbing houses throughout the country. The scheme is receiving serious consideration from the fact that a certain individual, whom we will call Mr. Promoter, has visited various jobbers, seeking options on their business. These options are to be forwarded to the law firm of Reed, Thatcher, Simpson & Barnum of this city, which firm includes Mr. Thomas B. Reed, former Speaker of the House of Representatives. This law firm, we believe, are to act as counsel for the interested parties.

As near as we can judge the scheme originated with a certain prominent Hardware jobber of Pittsburgh, and was put into active working order with the assistance principally of Boston parties—that is, to the extent of interesting some large jobbers as well as financial backers.

ASSUMED ADVANTAGES OF THE PLAN.

The advantages to be realized from the deal we judge to be: 1. The buying capacity of the central office and the influence over manufacturers in general. 2. The great saving in expenses by eventually merging several houses in one city or section into one. 3. Doing away with the fierce competition of the various jobbers, consequently commanding higher prices on sales.

No doubt other advantages will be claimed by the corporation, but the above are the ones most directly appealing to the minds of the jobbers.

REASONS FOR DOUBTING ITS SUCCESS.

Before proceeding further we will state that some jobbers regard the scheme as feasible, but many more jobbers and manufacturers and Hardware merchants in general, believe it to be impracticable, or next to impossible of success. This is the view of men known for their ability and sound judgment.

We share the opinion of some jobbers that the corporation may be organized, but we would have no confidence in its success. We base this conclusion on the following considerations:

Mr. Promoter has no doubt secured options from many jobbers, but on what terms? We venture to say that every merchant in the country will sell his business for a price. Securing an option is one thing, but at reasonable or acceptable terms is another. The options are secured on the merchandise stock of each concern at market values with a certain fixed rate of bonus for good will. Each jobber assumes the responsibility of book accounts, &c. The corporation does not buy unless in very exceptional cases real estate, or anything but merchandise, and what may be regarded as good will, such as firm name, trade-marks, &c.

WATER IN THE CAPITAL.

We think it safe to presume that, after allowing the bonus for good will and the very heavy cost of launching the enterprise, the capital will represent, perhaps, 150 per cent. water. In other words, we think the $100,000,000 capital will not buy more than, say, $40,000,000 business at actual value. The other 150 per cent. to our minds would be required to pay for the good will and other expenses. This will not be regarded as a wild statement by those familiar with the consolidation of various other industries.

Unless the jobbers receive cash for their business, are they not likely to get fooled in thinking they are getting big value for same? Would not the average jobber realize as much in cash per annum on a business with, say, $100,000 capital under his own control and management than on $250,000 stock in the big corporation under the control of others, and subject, perhaps, to such manipulations as are usually practiced in connection with stock jobbing enterprises? Every jobber selling his individuality, so to speak, should command a high price for it, particularly those with a business it has taken many years to establish, and having sons or other close relatives or loyal employees to succeed them. The jobber may be told that his services will be required to run his branch house, but for how long? He may also be asked for a "cash" option at the outset, but when the time arrives for closing the contract he will most likely be offered stock in the new corporation for all, or, at least, the greater part of the value of his business.

COMPETITION OF OUTSIDE JOBBERS.

We will suppose that the corporation is in existence, and that it controls, say, 100 houses, with a capital averaging $400,000 each, actual value, which we judge would be the limit at the outset; in other words, $100,000,000, after allowing an immense premium for good will and other expenses, could not control more than about 100 houses of the above class. This would leave independent of the consolidation the vast number of smaller but reputable jobbers with a capital ranging from $40,000 to $400,000, and here we might state that in many of the smaller cities houses with even $40,000 to $50,000 capital with two to five salesmen on the road are regarded as jobbers or houses of some importance by the trade in their section; in fact, as much so, relatively speaking, and for their own business purposes, as the jobber in a large city with $300,000 capital. Also keep in mind the fact that many large and influential jobbing houses will continue running their business independently as at present. Suppose also that the 100 houses in the corporation would necessarily be reduced by concentration to a much smaller number, it would be safe to presume that new competition would arise all over the country. It is not reasonable to suppose that if the large corporation own, say, six jobbing houses at Cleveland, they will continue to operate each one individually. They would no doubt eventually do away with all but one.

OPPOSITION OF THE RETAIL TRADE.

The question will be asked, how can all of the smaller individual houses compete with the immense corporation with all of the power behind it? To our minds, the independent houses would have the support, as far as possible, of the majority of the retail dealers, among whom there is a growing sentiment in opposition to trusts and combinations of all kinds, and also the

SYNDICATE BUYER,

with whose assistance he will obtain the bulk of the lines he handles at prices equally as low as any individual corporation, no matter how large. With such a corporation in existence, the vast majority of independent jobbers, as well as manufacturers, would lean heavily on the support of the syndicate buyer. In this respect we will advance an argument for our own individual interest: Presuming that many of the large jobbers we represent would enter the combination, we would feel free to solicit a large number of smaller jobbers whom

we would not now represent as a matter of policy. With the elimination of such restrictions as are now practically imposed upon us by the large jobbers, we could secure in many sections ten houses to take the place of the one lost. We are confident that within three months' time we could run our list of clients up to at least 200 with those remaining with us, and increase our profits materially, as well as the volume of our purchases. If the large corporation could take manufacturers' products, so could we and others of the syndicate buyers, and if the syndicate buyers were to work more in harmony, they could lend very considerable assistance to each other. Our buying capacity would be a close second to that of the corporation. To argue that the corporation could control even a fair percentage of the manufacturers is absurd. We have been told that one Screw factory worked to its full capacity could furnish all of the Screws consumed in the United States, and there are, we judge, about 12 or 15 Screw factories. This same fact relates to various lines. Manufacturers are the ones most strongly opposing the deal at the present time.

The buying capacity of the corporation would be very great, but so is that of the syndicate buyers, which would grow materially if the National Hardware Jobbers' Corporation were in existence.

OPPOSITION OF THE MANUFACTURERS

We might say to the manufacturers that at practically no expense you can have the trade of 200 customers through us, whereas you would have the trade of only one customer through the corporation. The other syndicate buyers would advance the same argument. Manufacturers perfer, as a matter of self protection, to have several hundred customers on their books, rather than the one through whom they largely sink their identity. This view has been expressed by many manufacturers.

One of the most important manufacturers in the country has already stated that if the combination deal is consummated, he and his two or three competitors will open branch houses all over the country to market their own goods. If we were to mention this manufacturer's name you would realize that they have the money and power to do it.

The Simmons Hardware Company, with their business of $15,000,000 per annum, are a good sized syndicate within themselves. Have they been able to check the growth of the various small houses both in and around St. Louis, or to prevent manufacturers from selling to these houses at jobbers' prices? It is true that the Simmons Hardware Company buy some lines at lower prices than any other houses. There are still a good many lines which we, as syndicate buyers, obtain at prices equally as low, and, in many cases, lower than the Simmons Hardware Company.

It has been stated to us that the most influential manufacturers' trust in the country has not been selling more than 60 per cent. of its products in some departments. On the other hand the small manufacturers who have had the temerity to start up in opposition to this trust have been kept busy to their full limit. If the strongest manufacturing corporation in the world cannot monopolize the trade in their particular lines, it is reasonable to argue that with the ease with which new Hardware establishments could be put into operation throughout the country, the National Hardware Jobbers' Corporation would meet with the strongest kind of competition, backed by a strong public sentiment.

In conclusion, without elaborating the subject, I would point out that there is a marked contrast between the advantages to be gained by combinations of jobbing as compared with manufacturing interests. There are frequently serious difficulties in the way of new manufacturing enterprises which would not be encountered in connection with the simple marketing of Hardware. With requisite capital, which in these days is easily obtained, there is no reason why new jobbing houses should not be established in all parts of the country. They would certainly possess an advantage over any overgrown consolidation, which would be unpopular with the trade and handicapped in many ways.

OLIVER BROS.,
By THOMAS E. OLIVER.

EXPORT NOTES.

C. S. Lawrence, with Tower & Lyon, 95 Chambers street, New York, accompanied by N. D. Holbrook of the Union Hardware Company, Torrington, Conn., whose product Tower & Lyon sell, in addition to Hardware of their own production, sailed October 2 on the steamer "Philadelphia" of the American Line for a short business trip to London and among the larger cities of England and Scotland. They will visit the trade in Great Britain in the interest of both concerns, whose interests are mutual. Mr. Tower observed on his recent trip the necessity for direct representation, as merchants there are desirous of doing business as directly as possible with manufacturers, thus eliminating all unnecessary expense as when done through middle men.

Miller Lock Company, Frankford, Philadelphia, Pa., are about to make a shipment of Locks to Trebizond, Turkish Armenia. They have recently executed a small order for Locks received from a point said to be 600 miles north of the Yukon, not far from the shores of the Arctic Sea. An American gold hunter at that distant point used his gold dust to guarantee the order. It took from about July 1 to September 12 for the dust to arrive at the company's factory.

Pierrepont B. Noyes, business manager of the Oneida Community, sailed on the White Star liner "Cymric," October 1, for Europe, where he will visit Russia, Norway and Sweden in the interest of the company, especially in the line of game and animal Traps and other Hardware specialties they manufacture.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

R. Doak of Grenada, Miss., and T. W. Mackey of Wetumka, I. T., have formed a partnership under the style of Doak & Mackey, and will open up in the wholesale and retail business at Wetumka, I. T., about October 15. The new firm would be glad to receive catalogues and quotations from manufacturers of Hardware, Stoves, Tinware, Wooden Ware, Sporting Goods, &c.

As will be seen by an article under the head of "Foreign Trade" in another column, Flint, Eddy & American Trading Company, Broad-Exchange Building, New York, are desirous of receiving catalogues, &c., relating to a large variety of Hardware and related products for their Sydney, Australia, house. They suggest that perhaps the best way for manufacturers to forward this matter would be to address it to the company's headquarters at New York, marked "Australian Department." The company will then see that the literature is forwarded to their Sydney branch.

JOHN J. TOWER of Tower & Lyon, 95 Chambers street, New York, sailed for Europe July 6, accompanied by his family, and returned on the "Manitou" of the American Transport Company September 24. The trip was principally for pleasure, although Mr. Tower made a few business calls while abroad. The time was mainly spent in Holland, Switzerland, England and Scotland, although they saw something of Germany and France also. In Mr. Tower's opinion the people seem to be in comfortable circumstances and generally well employed, although none of those countries, so far as he was able to judge, were enjoying the business prosperity we are now having in this country. What particularly impressed him was a much more cordial feeling toward this country, and the higher estimate of its possibilities and influence he observed in contact with the various peoples.

WHAT TO DO IN OCTOBER.

BY H. C. W.

"When the frost is on the pumpkin,
And the corn is in the shock,"

is a most capital time to finish the harvest of all that is real in the poet's couplet, and to bend every energy toward using to advantage the month that opens to the winter traffic of the Hardwaremen everywhere. It is a season of the year when much may still be taken up and prepared for, that, in the hurly-burly, or vacation, or procrastination of the late summer months has been overlooked.

October is a Month of Possibilities

such as, perhaps, is covered by but few, if any, of the other months, in that it is a good time for changes, for clearances, for remodeling and for additions. It brings to mind many lines that the merchant has not carried heretofore, and that might have been, and perhaps will be added, with handsome profit. It suggests the possibility of small Stove stocks, Gas and Oil Heaters, and the attendant goods, such as Pipe and Elbows, Rings and Flue Stops, Grate Enamels and Stove Polish. And it also suggests profitable luxuries that sell everywhere, such as Fire Irons, Andirons, Brass Fronts, Brass and Antique Sets, Hearth Dusters, Blowers, &c.

Other Lines that May be Added

at this time are many, not all of them being counted as regular goods; but just the same, they are very profitable, and are just the class of goods we must come to if we are looking for profits and would avoid the variety and 5 and 10 cent proposition.

At this season very many new houses are finishing, and Electric Bell Sets at $1.50, complete, make good stock, with Buzzers, Floor Pushes, Extra Dry and Wet Batteries, Binding Tape, No. 18 Annunciator Wire, and a stock of Sal Ammonia. Building suggests "Cold Water Paint," for now and all the year round, and for which there is a growing demand in many sections. It is put up in 5-pound packages and is profitable.

Among the small things we look to for paying the rental no one line is so salable and profitable as that of small Brushes of all kinds. A little investment will give you Marking Brushes of all sizes, 1, 1½ and 2 inch Paint and Varnish Brushes, Sash Tools in five or six sizes, Glue and Stencil Brushes, Shaving and Paste Brushes, all of which nearly, if not quite, double their cost for your profit.

October for Holiday Goods

and other goods that go all through the winter months, and now is the time to decide what they must be and to purchase, if you would have them in on time. Chafing Dishes and all the accessories that go with them ought not to be overlooked in any town of 4000 or 5000 or over. They may be a fad, but they are a lasting one. The Skimmers, the Spoons and Forks, the Platters and Trays, the Toasters, the Alcohol Founts, and all that go with them are profitable and have become a class of goods that sell for nine months out of the 12. Few goods have a season as long. Then there are the Safety Razors, Safety Strops, Fancy Sets of same and all that go with them. No stock in one's store pays so well as that of the regular line of Razors, Hones, Strops, Brushes, Cups and Soaps, and it should be kept up from now on through the winter months as at no other time.

The campaign time is at hand, and for the 31 days of October you should sell stacks of the boys' Brass Lanterns. Every boy who can raise a stray 25-cent piece buys one, and it is our experience that the older clubs carry them very regularly as a partial uniform. There is your line, too, of Plated Ware, Knives, Forks, Spoons and Fancy Pieces, for which holidays bring a wonderful demand. Then, too, are Carpet Sweepers, Umbrella Stands, Flower Stands, Blacking Kits and Air Rifles. Your Scissors, Shears, Pocket Knives, Manicure Goods, Carving Sets, &c., need attention in October, or they'll all be late in getting in.

Seeds and Bulbs are Profitable,

and now is the time when a good boy in the store should be put to work getting ready packages of 1½ pounds of Mixed Lawn Seed, to retail at 20 or 25 cents per package. He can hardly put up too many, if a sign is kept at the front door and a few line reading notices are run in the local paper. If lacking in experience in Bulbs and small Seeds, almost any friendly florist will inform you on the subject. Otherwise there are one hundred and one authorities in the shape of catalogues offered by growers and importers.

Change Methods of Advertising,

and change them now. If you have been running locals, try a good line of display work. Display advertising with good cuts to back it and selected daily and weekly papers in which to use it, pays better at this season of the year than any other possibly can. Cuts are cheap and easy to secure, and a Lantern picture, and Meat Grinder or Chopper cut almost tells its own story with but little wording. The cut of a woman using a Carpet Sweeper, or of one manipulating a Clothes Wringer or Fruit Press is right hard to improve upon with any wording of your own other than the make of goods, name of firm and price of the goods. Above all, have clean, distinct cuts, large enough to serve their purpose and tell their story.

Use to advantage, too, the many little booklets sent you with such goods. The cost of distribution is nominal and many sales are made through their medium. If used in no other way, see that every clerk makes it a point to wrap one in each package of goods put up. The housewife always is enough interested to read, or if not to read them, to remember their source when in want of the goods.

October for Window Drives

is as good a month as any in the year, and whatever the lines to be shown, let but the one article be used. If Lanterns, then fill an entire window with Lanterns, as though you had the only stock on earth. If Sweepers, fill with nothing else, showing some open and some with the gathered dirt as just emptied out. Use placards giving their merits, and above all, show the prices in plain figures. More goods are sold these days from a good show window as a silent salesman than through the medium of many that are not silent, back of your counter. While it is somewhat in the nature of repetition, whenever one of these windows is gotten ready, your advertising should correspond with it in every detail, else much of the good work is lost.

October for Collections

is a capital month, for the reason that the summer months always find the farmer with everything in the ground and not much of anything coming in till wheat and corn and oats begin to render a revenue. It is always a safe proposition to push collections to their utmost at this time. The writer has found less of disappointment, less of putting off at this time than at any other season of the year.

For the city customer October 1 is a usual settling time and is looked forward to by nearly all purchasers of goods. If we let it go by they then feel they should not be asked for the account until the first of the year. It is pretty certain that the average man will pay when he has the ready money and is looking forward to your coming.

Changes in Store Fixtures

cannot be better made in any month than that of October. It is not well to go on forever with the same old showcase, or even with the old ones in the same place and with no touching up or renewal. Customers like changes and it pays to make them. It is wonderful what a little moving about of cases, adding one or two new ones, renewing the old with metal polish or varnish, will accomplish. And as this is the season when all the new goods begin to arrive and should be shown at their best, then there can be no better month than this in which to do the work.

October Brings Life

and vim and push to all sorts and conditions of men, and should likewise bring them to the business. If it does not it is largely our own fault. So much of competition, the necessity for larger and more sales and smaller profits, should of itself keep pushing us on to greater endeavor. The business that grows now is like the plant that needs constant watering, and it should be borne in mind by all of us to the end that we may grow and go forward, and not take the down hill or retrograde. It's infinitely easier to start down and keep going than it is to start upward and keep growing.

NOTES ON FOREIGN TRADE.

BRITISH LETTER.

Offices of *The Iron Age*, Hastings House, Norfolk Street, Strand, London, W. C.

Prospects of American Trade in Austria.

I DO not think that a commercial representative of an American Hardware firm would pay his way through Austria, to begin with. At the same time, if next year any enterprising Hardware exporter would like to combine business with pleasure, I know of no more fertile field, both for pleasure and possible profit, than Austria. The journey from Zurich to Innsbruck, through the Arlberg Valley, is beautiful beyond words, and if this were a secular journal nothing would give me greater pleasure than to describe all the beauties of the scenery, not only through the Arlberg Valley to Innsbruck, but from Innsbruck down south to the Karrersee Mountains and the Dolomites, all of which, so far as mountain scenery is concerned, is equal to anything I have witnessed. The same can be said of Salzburg, Ischl and Holstadt, each place being full of variety and each characteristic. Traveling further east is Linz, a large industrial town, where a great deal of business is transacted. From Linz nothing is more enjoyable than to go down the Danube to Vienna on a boat, the scenery being not dissimilar from that of the Rhine. Lying north of Vienna is the city of Prague, full not only of medieval interest, but of modern industry, for Prague is the center of the iron and steel and engineering trades of Austria.

An American Trader in Vienna.

At Vienna I met an American salesman who, nearly three years ago, having occasion to go to Vienna on business, was struck with the possibilities of doing a large merchant trade. Having acquired the exclusive agency of one or two lines, he set to work. The chief point made by him is that the territory is practically virgin. The Austrian business men are naturally conservative, if not actually lethargic. They do business on the lines of their forefathers. None the less, although this dealer is pleased with the progress he has made, it is not an easy task. There is, to begin with, the difficulty of language. Throughout the regions ruled by the Emperor Franz Josef no less than 14 different languages are spoken. Even to old residents this language difficulty is disconcerting to the last degree. To the comparative stranger, who travels from Buda-Pesth through Vienna to Prague and west to the frontier at Eger, the variety of language is simply bewildering. Nor is business rendered the more easy when it is remembered that the various linguists have a whole hearted hatred for each other, and it is not at all improbable that upon the death of the aged Emperor the Kingdom of Austria-Hungary may disintegrate, the German section being annexed to Germany, Hungary and Bohemia each founding kingdoms or republics of their own. The most careful inquiries failed to give me the slightest inkling as to what would be the future of this country on the death of the present ruler. Some fear a revolution, others expect the break down of the parliamentary system, to be followed by a despotic government not dissimilar from that of Russia. Whatever may be the future, the element of doubt adversely affects the money market. This is particularly the case in Hungary, the finances of the Hungarian Government being in a generally depressed condition.

License and Taxes.

Next to the obstacle of language comes that inevitable dead weight upon trade which an overmilitarized government must of necessity impose upon its business men. The taxes upon the profits of business companies in Austria amount to 46 per cent. The taxation of individual traders is not so heavy as this, the percentage going down, according to trade and locality, to about 15 per cent. It thus becomes obvious that whatever goods are sold in Austria must obtain a high price to cover the permanent charge of heavy taxes. As a large proportion of these taxes is the house tax, it also follows that the better the locality and the bigger the house, the heavier will be the tax. In addition to this, every trader, wholesale or retail, must obtain a license from the Government, and if old interests are threatened this is by no means easy. Quite recently an enterprising American tried to open up boot shops for the sale of American boots and shoes, but so great was the clamor among the native boot makers that the enterprise fell through. At the end of 12 months every trader must be prepared at any time to show his license on pain of heavy legal damages.

Credit.

On the other hand, the wholesale dealer is better situated in regard to credit than in probably any other country in Europe. My informant tells me that during the two years he has been in business his bad debts have amounted only to about $50. This is due to the stringency of the law in regard to the recovery of debt. If a debt is not paid according to contract, or a draft refused or dishonored, the creditor can practically be in possession of the debtor's estate in a month or six weeks. The effect of this is to make all retailers exceedingly careful in ordering goods. It may therefore be inferred that if American exporters succeed in opening up business relations with Austrian wholesale houses there is no reason why they should not be reasonably sure of payment.

Goods That Are Wanted.

It may be assumed without further discussion that on account of the high protective tariff, bread-and-cheese Hardware has no chance in Austria unless it be of home manufacture. As the tariff is also based upon the weight of goods rather than ad valorem, there is not much chance of selling heavy goods in Austria unless they have some special qualification which puts them above competition. Thus, except in certain special brands, such goods as Nails and Wire, Iron Bars and similar goods have no chance whether they are sold by American, British or German traders. The dealer referred to, however, is emphatic upon the good prospects of American specialties. He is convinced that a large trade in any light Hardware specialties which may from time to time come upon the market can be done. To him this is not a question of weight or tariff, but of salesmanship.

Some of the goods which are believed to be marketable are the following:

Lamps.—There should be a good trade here in Lamps, because although electric light seems prevalent, yet it costs a good deal, and most of the Austrian houses are lit by candles or Lamps. So far as I could ascertain, there were no prominent Lamp manufacturers in Austria, so that the competition should lie between America, England and Germany. It is not believed that the cheap Lamp is necessarily the most popular, and if a Lamp having special qualities is available, even at a higher price than would be given for Lamps which perhaps might be as useful in practice but do not possess some special attribute, they could be disposed of.

Electroplated Bronzes.—Another suitable line of goods are Electroplated Bronze and Metal Articles.

Blue Flame Oil Lamps.—Still another line is the Blue Flame Oil Lamp.

Radiators.—I asked about Radiators. Everywhere I went, both in private houses and hotels, I found the rooms were heated by the old, highly ornate,

but very ineffective slow combustion Stoves. Even in the largest hotels the Radiator system is *non est*. Doubtless the tariff has a good deal to do in keeping out Radiators, but it is suggested that if some Radiator firm were to send over one or two skilled salesmen and one or two skilled mechanics, there could be opened up what in Austria would be an absolutely new line. As there are a great many American visitors in Austrian hotels, it sems to me that the hotel proprietors might possibly be well disposed toward Radiator installations.

Wood Working Tools.—As for small Tools, I noticed a number of these, some from Sheffield, but mostly from Solingen (Germany). Wood work is an important feature of Austrian industry, and accordingly small Tools are in great request. Here again it is thought a remunerative trade in this line is possible.

Office Specialties, &c.—Other goods mentioned were Office Specialties, Scales, Revolvers, Safety Razors and Air Rifles.

Electric Fans.—The prevalence now of electric power in the larger towns of Austria, such as Vienna, Prague, Linz, Carlsbad, Marianbad and Salzburg, and also Buda-Pesth in Hungary, points to the use in the near future of Electric Fans. I did not see an Electric Fan throughout my trip in Austria, and yet the weather was such as would have made these Fans eminently desirable.

Enameled Bedsteads.—Another line of goods which in the near future is likely to be developed is that of Enameled Bedsteads. Hitherto the Bedsteads in Austria have been made of wood. There is now a distinct reaction toward the enameled metal article. Some way across the border is Nuremburg, and in conversation with the secretary of a large Bedstead manufactory I was informed that if this trade is to be developed either in Austria or Germany, it will not be so much in cheap Bedsteads as in medium price ones. Those who have Wooden Bedsteads will continue to use them in preference to cheap Iron Bedsteads, but as the fashion seems to be turning slightly toward the metal product, those who buy want something pretty in pattern and of some durability.

Builders' Hardware.—Another specialty for which there is a growing demand is Door Furniture of the character made by the Russell & Erwin Mfg. Company, Reading Hardware Company and Sargent & Co. The way has been prepared, in a large measure, for this class of goods by the settled tradition of the people to use Ornamental Locks and Door Furniture generally. Everywhere I went throughout Austria I was struck with the excellent workmanship and design of the Knockers, Handles and Locks. In the more modern towns I observed, however, that the old hand made article was giving place to the machine made. There seems, therefore, some probability of this trade being developed. The taste of the people has been cultivated along lines similar to the designs used by the important concerns named above, and it now becomes a case of cost, transit and salesmanship. These goods which I have mentioned are all possible sellers. With the exception of Radiators and Bedsteads, they meet the difficulty of goods imported into Austria of being light, and therefore not taxed, *pro rata*, too heavily.

AUSTRALIA.

Flint, Eddy & American Trading Company, Broad-Exchange Building, New York, large exporters of American products, both of manufactured and food character, and importers of raw materials, recently received the following letter from W. G. Wilson, the head of their branch at 32 O'Connell street, Sydney, New South Wales, which is but one of many similar depots they have scattered around the world:

Please find herewith clipping from a recent issue of *The Iron Age* [the notice referred to asked for catalogues for the Durban, South Africa, branch of this concern]. A similar announcement with reference to the Australian department might be productive of a good supply of catalogues. We are now organizing a proper catalogue library, and with what we have already received from you we will have a fairly representative collection of American manufactures. In many cases, however, we have only *one* catalogue, and we frequently have inquiries from buyers for the loan of a catalogue, which in nine cases out of ten is never returned. Kindly keep sending along supplies of standard catalogues, and please see that price-lists and discounts and fullest information as to packing, railage, cartage, &c., is always forwarded with the catalogues.

The production of this letter was preceded by a remark about how closely foreigners scan the columns of *The Iron Age*. That the notice was of great service to the Durban house is evident from the fact that nearly a truck load of trade literature was received and forwarded to their Durban house. They also got a great many letters in relation to the subject, asking if there was anything they (the manufacturers) could do besides sending catalogues. It was also remarked that many goods were thus brought to their notice that even in their seasoned experience were new to them, and which resulted in new business by correspondence with the manufacturers.

The New South Wales market is the largest and most progressive of the five Australian colonies, and it takes almost everything used in a new and well civilized country. As a suggestion, however, anything in General Hardware, Building Materials, Contractors' Supplies, Wood Working and other machinery, House Furnishing Goods, including Tin, Japanned and Enameled Ware and kindred Utensils, Stoves, Furniture, Carriages, Wood Handles for Forks, Rakes, Hoes, &c., and Hardware Specialties are desirable. Manufacturers can use their own discretion in sending such material, but if sent to the main house in New York marked "Australian Department" to the address above it will be less expensive to the sender and sure of reaching its destination.

SOUTH AFRICA.

Ulysses D. Eddy, president of Flint, Eddy & American Trading Company, referring to business in South Africa, expresses the opinion that an examination of the statistics showing the volume of goods going into those colonies indicates that the figures now measure up to those recorded before the war began, notwithstanding all the adverse circumstances by which parts of the territory are handicapped.

ONEIDA ANIMAL TRAPS IN INDIA.

The Oneida Community, Kenwood, N. Y., and 413 Broadway, New York, have had great success with their Animal Trap No. 6 in India. Owing to the turbulent condition of some sections the British Government has taken away the Fire Arms of natives. Left thus practically defenseless, the tigers have come out of the jungles and made disastrous encroachments on people, carrying away many of them. Some of the missionaries in that country communicated directly with the company, and obtained some of this size Trap, which is intended for such game as our Rocky Mountain grizzly bears, lions, tigers, cougars, &c., the jaws having a spread of 16 inches, an entire length of 4 feet, and weighing 42 pounds each. Fourteen tigers were caught at different times in one Trap. Some interesting letters have been received from the missionaries, together with a consignment of tiger skins from the animals caught, both letters and skins being a part of their exhibit at the present Pan-American Exposition in Buffalo. When the tigers are securely in the Trap the natives attack them with spears, &c. These Traps, which are made in a large number of sizes for any animal from the smallest to the largest, even including one recently made to catch elephants, are made of the very best materials, as grizzlies have been known repeatedly to pound them terrifically against stumps and rocks to free themselves when caught.

F. B. Cameron has commenced the sale of Shelf Hardware, Stoves and Builders' Materials at Lawton, Okla.

CHICAGO STEEL MFG. COMPANY.

A SYNDICATE of Chicago and Indiana capitalists are establishing an enterprise at Hammond, Ind., in which the Hardware trade will be considerably interested. The products which will be manufactured will be largely distributed through the medium of the Hardware trade. The syndicate have purchased the entire capital stock of the Chicago Steel Mfg. Company, an Illinois corporation, now in existence for about 15 years, who are the owners of the steel works at Hammond, which have been operated by various parties through lease and otherwise during that period. M. S. Denslow of Chicago, with the assistance of Frank M. Baldwin of Indianapolis, interested the members of the syndicate in the proposition to take the Hammond Works and combine with them other undertakings, which would make the new enterprise one of manufacturing importance. The syndicate not only purchased the Chicago Steel Mfg. Company, but also the assets of the Lakeside Nail Company, who recently operated a portion of the Hammond plant, and the entire business of the Collier Shovel & Stamping Company of Washington, Ind. The property at Hammond comprises a steel plant, consisting of two Bessemer converters, several trains of rolls and 110 Cut Nail machines. The Shovel factory will be removed to Hammond as quickly as possible. The plant at Hammond will be thoroughly overhauled, the buildings will be put in complete order and new machinery will be bought as found necessary for the purposes of the company. It is expected that at an early date a 12-inch and an 8-inch train of rolls will be added. Some special features will be introduced in the manufacturing operations, which are expected to effect an important reduction in cost.

The company will manufacture the sheet steel required for the use of the Shovel factory. In addition to manufacturing Shovels, they will also turn out the Handles. They will make a general line of Shovels, Spades and Scoops, their capacity at the start to be 200 dozen per day. They will, however, continue to supply the trade with Shovels during the process of removal from Washington. They will further make specialties in Stamping Steel, such as Washers, Hinges and other products mainly in the Hardware line. They propose also to have one of the best machine shops in their locality and will be in a position to do special work in this line.

The officers of the reorganized company are as follows: President, C. G. Hutchinson of Chicago; vice-president, Frank M. Baldwin of Indianapolis; second vice-president, A. F. Cable of Washington, Ind.; treasurer, M. S. Denslow of Chicago; secretary, L. Hugh O'Donnell of Washington, Ind. The general offices of the company will be located at Hammond, Ind.

PRICE-LISTS, CIRCULARS, &c.

THE W. BINGHAM COMPANY, Cleveland, Ohio: An attractively printed little book of 64 pages, which is referred to as not a catalogue, but intended more as a suggestion of what the company have to show the trade in their remodeled House Furnishing department, occupying the second floor of their establishment. Special attention is invited to their fine line of Cooking Utensils.

THE OGDEN MFG. COMPANY, Newark, N. J.: Catalogue No. 3, relating to the Ogden Automatically Regulated Liquid Door Check and Spring for right or left hand doors. It explains the construction and application of the device and illustrates some of the large office buildings in which it is exclusively used.

F. E. MYERS & BRO., Ashland, Ohio: Circular under date September 26, calling attention to the different lines of their manufacture, including Hand and Wind Mill Pumps, Power Pumps, Working Heads and Tank Pumps, Spray Pumps and Auxiliaries, Hay and Grain Unloading Machinery and Myers' Stayon Door Hangers.

THE WILKE MFG. COMPANY, Anderson, Ind.: Catalogue of the Wilke Crystal Refrigerators. These Refrigerators are entirely lined with ½-inch plate glass and are made in the full range of sizes. The catalogue reproduces views of these Refrigerators in exact colors. Full details of the method of construction are presented.

FOX CUTLERY COMPANY, Dubuque, Iowa: Circular giving a number of testimonials from those who have used the Fox Razors, manufactured by this company.

SIMMONS HARDWARE COMPANY, St. Louis, Mo.: Catalogue No. 401 for the season of 1901-2, containing 390 pages, 9¾ x 7¼ inches. It is handsomely gotten up and very complete, with illuminated covers and copious illustrations, and describes an immense assortment of Lamps, Shades, Jardinieres, Umbrella Stands, Pedestal Jars and Art Pictures, a large proportion of which are printed in *fac-simile* colors. From this catalogue can be ordered Lamps of all kinds for all uses, the latest improvements in both Gas and Oil Lamps being shown and described.

THE STANDARD PAINT COMPANY, 100 William street, New York: A 14-page illustrated booklet in which facts about their Ruberoid Roofing are demonstrated. This Roofing is designed for all kinds of buildings, from the light temporary frame structure to large brick, stone or iron buildings.

PHOSPHOR-BRONZE SMELTING COMPANY, Philadelphia, Pa.: Price-list No. 19 of Elephant brand Phosphor-Bronze and other alloys.

TRADE ITEMS.

HAMMACHER, SCHLEMMER & Co., 209 Bowery, New York, have been made agents for the Nicholson File Company's Kearney & Foot brand, and will carry a large stock in New York for prompt distribution. They have also just issued a special catalogue of Files and Rasps exclusively, in which the half-tone illustrations show the actual sizes of the cutting surfaces of Files, a commendable feature.

THE PLANET MFG. COMPANY, manufacturers of the Iroquois and Planet Feed Bags, Buffalo Axle Grease and Awning and Canvas Goods of all kinds, are now located in their new factory in Westfield, Mass., and are prepared to handle promptly all business in their several lines. They state that three times within almost as many years their increasing business has necessitated their securing larger factory accommodations. Their present change they consider a more lasting one, as they now occupy a large building of their own, convenient to two railroads, and with ample room for future growth. They have also made a change in their management, A. M. Schappa, for more than 30 years with the W. & E. T. Fitch Company of New Haven, Conn., becoming general manager.

PUTNAM NAIL COMPANY, Neponset, Boston, Mass., announce that J. C. Hogan has succeeded F. H. Lovejoy as traveling salesman, and will hereafter cover the territory formerly visited by Mr. Lovejoy.

THE UNITED STATES CLOTHES PIN COMPANY, Montpelier, Vt., who are now under the management of Charles E. Booth, have recently increased their manufacturing facilities by the addition of new machinery, in order to meet the demand for United States Spring Clothes Pins, which are now generally used in this country and largely in foreign lands. The Pin is patented and clasps the clothes on the line, holding them there firmly until released, regardless of wind and weather, and, the manufacturers state, will not damage the most tender fabric. The goods are attractively put up in one gross cartons suitable for counter display, and are packed in strong cases for transportation to foreign countries.

Pickering Hardware Company, Cincinnati, Ohio, have purchased the four-story building adjoining their present quarters and are now remodeling it. When completed it will be occupied by their Sporting Goods department, including Guns, Fishing Tackle, Bicycles, and Golf, Tennis and Baseball Goods. They will largely increase these lines, the intention being to make them as complete as any in the State of Ohio. They expect to take possession of the remodeled quarters about October 15.

AMONG THE HARDWARE TRADE.

J. F. Watson, Houston, Mo., has admitted his son to partnership, under the style of J. F. Watson & Son. The firm handle Shelf and Heavy Hardware, Stoves, Tinware and Agricultural Implements.

A. J. Macdonald has lately opened a store in Bainbridge, Ga., carrying a line embracing Hardware, Stoves, Agricultural Implements and Plumbing Supplies.

J. B. Harrison has purchased the business of O. P. Cozatt, Afton, I. T., dealer in Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, &c., and will continue at the old stand.

The Wilkins-Leonard Hardware Company, Youngstown, Ohio, have been incorporated with a capital of $50,000. The incorporators are George Tod, E. R. Thompson, William Reese, W. R. Leonard and C. F. Wilkins. The new store will be located on East Federal street, Youngstown.

C. H. Casey, retail Hardware merchant, Jordan, Minn., has recently completed and moved into a modern brick building. It is two stories high, 119 feet long and 33 feet wide, with basement under the entire building. It extends through the block and faces on two streets. The lower story has glass fronts and the upper story, which is used as a residence by the proprietor, has bay windows alike on both streets. Mr. Casey began business in 1893 with one year's experience and a modest capital, and by hard work, liberal treatment of customers and persistent advertising, has built up a very satisfactory trade.

Beardsley Hardware Company have succeeded Beardsley & Son, dealers in Hardware, Stoves, Farm Implements, &c. The members of the new firm are S. P. Beardsley, H. E. Beardsley and William Stuart. Their store has been enlarged and a stock of Buggies and Wagons added to the former line.

La Junta Hardware Company, La Junta, Col., have been incorporated and have succeeded to the business formerly carried on by A. B. Corbin, who will act as manager. The business is both wholesale and retail.

Lund Company have lately opened up in business at Cœur D'Alene, Idaho, and are carrying a stock including Hardware, Stoves, Tinware, Sporting Goods, Agricultural Implements, Buggies, Wagons, Harness, &c. They also have a plumbing department.

B. N. Trout has recently embarked in business at Juliette, Idaho, handling Shelf and Heavy Hardware, Stoves, &c.

Leibsle & Trumbull have succeeded H. F. Leibsle in the Hardware, Stove and grocery business in Conrad, Iowa.

S. A. A. Walker has bought the Hardware, Stove and Tinware business in Gibbin, Neb., formerly conducted by L. J. Babcock.

John De Visser, Kalamazoo, Mich., has disposed of his wholesale Hardware, Stove and Farm Implement business to J. Frenkel of New York City.

Henry M. Wittemore has sold out his Hardware stock in New London, Conn., and the business will be discontinued.

McElroy & Zollinger have succeeded McElroy & Lorenz, Vinton, Iowa, dealers in Hardware, Stoves, Tinware, Sporting Goods, &c.

Tampa Hardware Company, Tampa, Fla., will separate their wholesale and retail departments, and for the accommodation of the former are now erecting a building on the railroad. They will fit up their present stand as a first-class retail store.

Miller-Minteer Hardware Company are successors to Norman Hardware Company, Norman, Okla.

Nymeyer Bros. & Warntjes have purchased the business of Wilkinson & Nymeyer in Hull, Iowa. They advise us that they are carrying a fine stock of up to date Hardware and have a fine building, with repair shop in connection.

W. A. Shepard & Co. have succeeded Shepard & Foster in the Hardware business in Joplin, Mo.

Edward F. Cords has bought the Hardware business of T. M. & W. W. Davidson, Elkader, Iowa, and will continue under his own name.

The Benbow-Horton Hardware Company have lately engaged in business in Lawton, Okla. P. T. Benbow was formerly president of the Benbow-Brammer Mfg. Company of St. Louis, having disposed of his interest in that concern a few months since. Mr. Horton has been connected with the Simmons Hardware Company of St. Louis for the past seven years. They occupy a new building, 25 x 70 feet, and carry a line of general Hardware, Farm Implements, &c.

J. F. Chiles is successor to Chiles Bros. in the retail Hardware, Stove, Farm Implement and grocery business in Conway, Iowa. Mr. Chiles also conducts complete Harness and Tin shops.

G. H. Corliss, dealer in Hardware and groceries, Plymouth, N. H., has sold an interest in his business to Frank P. Sawyer, and the style is now G. H. Corliss & Co.

The Bennett Hardware Company have opened a new store in Okmulgee, Ind. Ter. The line carried embraces Shelf and Heavy Hardware, Stoves and Tinware, Sporting Goods and Harness.

Jas. M. Cavanaugh has lately established himself in the Hardware, Stove, Tinware, Farm Implement and Sporting Goods business in Kingman, Maine.

R. M. Bower has recently embarked in the Hardware business in Whigham, Ga.

MISCELLANEOUS NOTES.

Hampton Design in Door Trimmings.

The Russell & Erwin Mfg. Company, New Britain, Conn., and 43-47 Chambers street, New York, are just putting on the market the Hampton design in door trimmings. These goods are made of bronze plated wrought steel, in antique copper and regular oxidized copper finishes. In this connection they have for distribution a booklet, envelope size, which illustrates and describes various sets, knobs, escutcheons, &c. On the cover is an artistic pictorial reproduction of Hampton Court, England.

Fisher Handle Company

The Fisher Handle Company is the name of a new enterprise which has just commenced operations at Wapakoneta, Ohio. They have built a factory for the manufacture of second-growth hand shaved hickory handles.

Bridgeport Gun Implement Company.

The Bridgeport Gun Implement Company, Bridgeport, Conn., and 313-315 Broadway, New York, in addition to manufacturing full and complete lines of golf goods, furnishing everything needed in the game as well as laying out golf links, have just begun the manufacture of tennis rackets, &c. In a booklet or advance

circular on this subject illustrating tennis rackets, balls, nets, poles, covers, braces, &c., announcement is made that they are now in a position to supply all high grade and medium grade tennis goods. Attention is drawn to

Fig. 1.—Asbestos Sad Iron.

this, their first step in a new line of production, which they say they will make superior to anything on the market and equal in quality and reputation to their golf clubs and balls.

Asbestos Sad Iron.

The Dover Mfg. Company, Canal Dover, Ohio, are offering the sad iron shown in the accompanying cuts. It is made in two parts—the core or iron proper, and its hood, or cover, with the necessary handle. The core is described as a solid block of the best obtainable iron, retaining the heat and providing the weight necessary to secure a high polish on the work with the least possible muscular effort. The core is referred to as being heavily nickel plated, and its face as being ground absolutely true, and finely polished. The hood is a neatly fitting nickel plated cap, which slips over the core, its lower edge resting upon the projecting flange of the core, to which it is instantly and rigidly secured by a locking device. This is alluded to as being made of a high grade spring steel, simple in construction, positive in action, and so firmly securing the hood to the core that it can only be detached by the operator. The entire surface on the inside of the hood is lined with asbestos, to serve the double purpose of preventing the walls of the hood becoming unduly heated, and at the same time to retain the heat in the core by completely screening it, when in use, from air currents. It is remarked that the dead air space between the upper surface of the core and hood materially supplements the

Fig. 2.—Baby Sad Iron.

nonconducting asbestos lining. As the hood is never upon the core, except when the iron is being used, it is pointed out that it cannot become heated, and is readily kept clean and bright at all times. The handle is attached to a broad shield of sheet metal. The shield, while firmly secured to the hood, is so arrnged that a wide air space intervenes between the upper surface of the hood and the under side of the shield. This construction, in connection with the asbestos lining, is to eliminate any possibility of the handle becoming more than slightly warm. In designing the handle especial care was taken to secure one that should neatly fit a lady's hand. The covers, shields and springs are referred to as being copper plated before nickeling to secure what is known as never rust plate. The manufacturers guarantee the irons to be perfect throughout, and replace broken or defective parts free of charge. A set consists of one handle and cover combined, one core or bottom and a stand, weighing 2½ pounds. A set of the baby iron, Fig. 2, includes the same number of pieces, and weighs about 1¼ pounds.

The Fox Cutlery Company's Shaving Set.

An illustration is herewith given of a new shaving set which has been placed on the market by the Fox Cutlery Company, Dubuque, Iowa. The contents of this set consist of a Fox razor with strop, nickel collaps-

The Fox Cutlery Company's Shaving Set.

ing badger brush and an aluminum comb, all of them being represented by the company as of the very best quality.

The Turner Little Wonder Light.

The Turner Brass Works, 122 East Kinzie street, Chicago, have embarked in the manufacture of vapor lamps on an extensive scale and have just brought out the Turner Little Wonder light, which is herewith illustrated. It is of the under generator type and represents, it is claimed, the most advanced ideas which have so far been produced in vapor lamps. The lamp in appearance may seem to differ but little from other recently invented lighting appliances, but important changes have been made in its mechanism. The globe font or base is a nickel plated bowl made of 18 gauge copper, which is lined with block tin to effectively prevent the gasoline corroding the copper, and is guaranteed to stand a pressure of 110 pounds. Through a small brass tube inserted in the bowl, the gasoline is forced up to the burner by air pressure. The lower end of this tube rests upon the inner base of the bowl, while the upper end terminates in the generator. Surrounding the generator is a small asbestos lined cup, into which a teaspoonful of wood alcohol is poured, and a

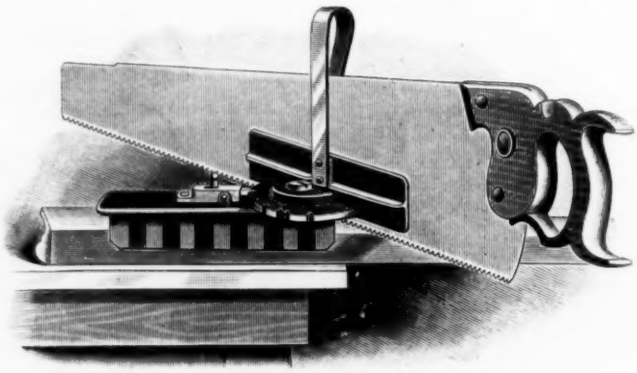
match is applied to generate the heat in starting the light. A double filling plug, termed a filler and air plug, located on the side of the bowl, is the means by

The Turner Little Wonder Light.

which the lamp is replenished. This plug is entirely removed from the aperture in pouring the gasoline into the bowl, and when it is again fastened in place a small thumb screw piercing its center is slightly loosened, a rubber tube is connected to it, and the air is pumped in to whatever force is desired. This lamp is claimed to be the only gasoline lamp using an automatic cleaning valve. A small steel needle is so arranged that at each half turn of the cut off valve the needle passes into the orifice of the burner, and at the next half turn it is withdrawn. The motion is the same, turning either right or left, after having opened the valve a few turns. It thus moves automatically in its process, removing the carbon at the base of the burner and thus preventing the latter clogging. It does not come in contact with the extinguishing rod and cannot in any way turn the light out. This improvement favorably impressed the inspectors of the Iowa State Insurance Board. The lamp is adapted for use in any interior lighting, especially in large establishments, public resorts, stores, &c., but can be used as effectively in the open air as within doors. It gives a 500-candle-power light.

Star Miter Box.

Millers Falls Company, Millers Falls, Mass., and 28 Warren street, New York, are now offering the Star miter box, as here illustrated. It is adjustable to the various required angles and having a double shaft or rest, will cut either a right or left angle equally well. It is made entirely of iron and steel, japanned, with bright parts polished and nickel plated. It is referred to by the manufacturers as compact and for outside work, cornices, &c., as very convenient; also as well adapted for cutting wall moldings for picture hanging. It can be used in connection with a panel or back saw

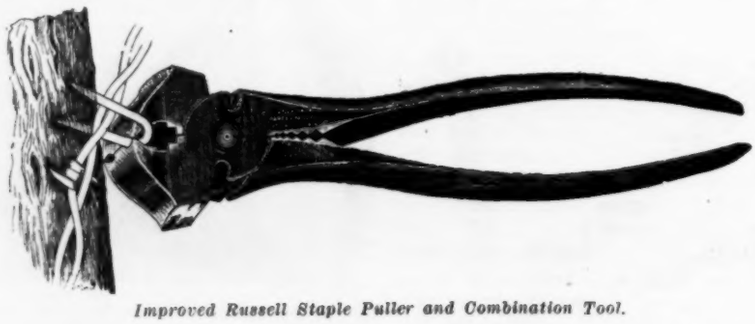


Star Miter Box No. 40.

and any depth of molding can be cut. They are put up one in a box.

Improved Russell Staple Puller.

The Utica Drop Forge & Tool Company, Utica, N. Y., for whom Smith & Hemenway Company, 296 Broadway, New York, are direct representatives, have brought out an improved form of the Russell staple puller, as shown herewith. The new features include a device between the jaws and the pivot for tying barbed wire, and a wire splicer on the opposite side of pivot for splicing plain wire. Other changes are in the form or shape of the jaw ends, which now have a flat surface and larger hammer surfaces on both sides of jaws. Other details of this combination tool are two staple pullers, pincers,

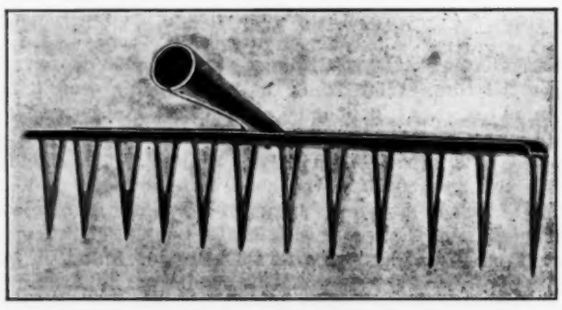


Improved Russell Staple Puller and Combination Tool.

monkey wrench, two nail pullers and two wire cutters. It is 10½ inches long and weighs 1½ pounds.

Pressed Steel Rake.

The accompanying illustration shows a pressed steel rake put on the market by the Pressed Steel Rake Com-



Pressed Steel Rake.

pany, Ellicott square, Buffalo, N. Y. The teeth are cut from bars of steel with the edges channeled to give stiffness, and then pressed down at right angles, all uni-

form in size, shape and spacing. The material used is of best open hearth steel, uniform in quality, made especially for the purpose. The ferrule is made of sheet steel cut into blanks and then pressed into shape. Holes are punched for riveting it to the rake head and for securing it to the handle. Before riveting the ferrule is forced into the channel of the rake head to make a firm and secure attachment, but rivets are used as a double precaution against their becoming loose. The handle is secured in place by a small steel staple. The rakes are made with 10, 12, 14 and 16 teeth, with metal parts coated with black enamel, except the lower portion of the teeth, which remain the original color. The handles are 6 feet long, selected and straight grained. The teeth are referred to as being very strong in the direction requiring strength, and amply strong in the other direction. It is remarked that they seem light, but by sufficient pressure they may be bent one over against the other, and when released will return to their original position. The rake, it is pointed out, breaks up the soil finer and with less effort than the ordinary rake, and the teeth, being thin, cut up and destroy grubs and other forms of animal life within their reach.

Fig. 1.—Regina Bicycles, Model 1901.

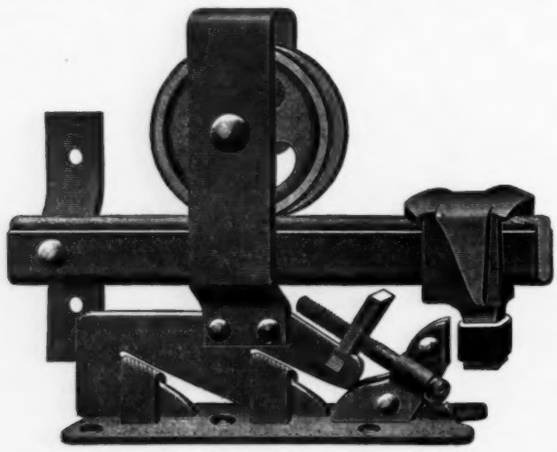
Fig. 2.—Enlarged View of Working Parts of Regina Bicycles.

Regina Bicycles, Model 1901.

The Wadman Cycle Company, Utica, N. Y., are introducing the bicycle here shown. The manufacturers state that this bicycle overcomes the objectionable features of both chain and chainless wheels; that it is stronger, cleaner and more easily propelled than the chain and sprocket variety; that it is simpler, less apt to get out of order, more easily repaired, and that it has the power more directly applied than any other chainless wheel. The following advantages are mentioned: That the wheel has greater power with less exertion, the power being transmitted direct, the foot traversing the most powerful two-fifths of the circle only; that it is strong, the propelling machinery being forged from the best of steel and being practically indestructible; that the machine has only two spur gear wheels, and that there is nothing to tear or soil clothing, so that short skirts and trouser guards are unnecessary. It is explained that in use there is less knee motion than with other wheels, owing to the oscillating motion of the pedals. This feature, it is remarked, makes the wheel especially desirable for ladies, as it causes less movement of the skirts, gives the rider a more graceful appearance, and enables her to use a saddle without a pommel. The rider is more directly over his work, it is pointed out, which, with the long cranks, gives much additional power and more complete control over the wheel, even on the steepest grades. It is claimed that it is impossible to get the gears out of line, as they are both firmly held in a single steel forging; that all points of contact are ball bearing and easily adjusted; that there is no lost motion or back lash; that all special parts are steel drop forgings, and that the material used throughout the bicycle is the best experience and actual test could suggest.

The Wilcox Velvet Roller Bearing House Door Hanger.

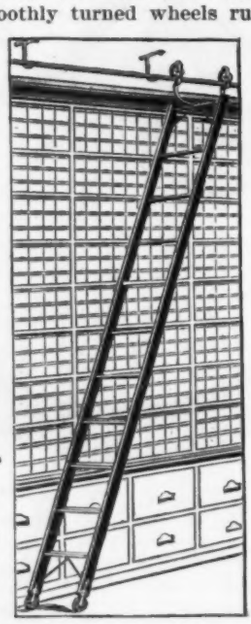
The Wilcox Mfg. Company, Aurora, Ill., have added the door hanger illustrated herewith to their already long list of specialties in this line. It is a single track steel hanger, and is referred to as being a new departure from anything heretofore produced. Special points of advantage in this hanger are as follows: That the track is made exceptionally strong by being bent in a deep U shape, in which a wooden shoe is placed upon which the wheels rest, thereby making a noiseless single track steel hanger, which can be sold at a very moderate price; that the bearing is made of steel rollers case hardened, and that the hanger is very simple in its construction. This feature, together with its cheapness, makes the company regard it as an extremely desirable addition to their line.



The Wilcox Velvet Roller Bearing House Door Hanger.

The Milbradt Trolley Ladder No. 15.

The trolley ladder illustrated herewith is manufactured by G. A. Milbradt & Co., St. Louis, Mo. The ladder runs, at the top, on a round steel tubing 1 inch outside diameter, which rests in strong malleable iron brackets screwed to the ceiling. The brackets grip about two-thirds around the track to securely hold it in place. Paper filled wheels, it is shown, run noiselessly on the track. Two smoothly turned wheels run on the floor.



The Milbradt Trolley Ladder No. 15.

The ladder is strongly built, it is remarked, and has sufficient incline to make it easy to climb, and is therefore especially adapted to hardware stores, or to any business where heavy goods are handled. The point is made that as the ladder runs independent of the shelving it is often the most suitable to use when shelving is not so arranged that ladders can be conveniently applied to it.

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Current Hardware Prices.

REVISED OCTOBER 1, 1901.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓@33⅓&10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent discount.

Cut Prices.—*In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.*

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 4 1901), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, ₩ doz. $3.00....33⅓@33⅓&10%
North's.....10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—

Ives' Patent.....25&5%
Taplin's Perfection.....50%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Eagle Anvils.....₩ lb 7¼@7¾¢
Hay-Budden, Wrought.....8@9¼¢
Horseshoe brand, Wrought.....9@9¼¢
Trenton, Wrought.....₩ lb 8¼@8¾¢

Imported—

Peter Wright's.....9¼@9¾¢

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....20%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Hull Bros. Co.:
Lots of 1 doz.....25%
Quantity Lots.....20%
Lots of 3 doz.....30%

Augers and Bits—

Com. Double Spur.....70@70&10%
Boring Machine Augers.....60&10&10@70&10%
Car Bits, 12-in. twist.....60@60&10%
Jennings' Pattern Auger Bits.....50&10&5@60%
Ford's Auger and Car Bits.....40&10%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list....40%
No. 30. R. Jennings' List.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits 15&10@15&10&5%
Mayhew's Countersink Bits.....40%
Pugh's Black.....30%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....50&10%
Snell's Car Bits, 12-in. twist.....60%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—

Standard List.....65@65&5%

Expansive Bits—

Clark's small, $18; large, $26.....50&10%
Lavigne's Clark's Pattern, No. 1, ₩ doz., $26; No. 2, $18.....50&10%
C. E. Jennings & Co., Steer's Pat.....33⅓%
Swan's.....60%

Gimlet Bits—

Common Double Cut..gro. $2.25@2.75
German Pattern.....gro. $3.25@4.50

Hollow Augers—

Bonney Pattern, per doz. $11.00@11.50
Amca.....35&10%
New Patent.....25&10%
Universal.....20%
Wood's Universal.....25%

Ship Augers and Bits—

Ford's.....40%
Snell's.....40%
C. E. Jennings & Co.:
L'Hommedieu's.....15&10%
Watrous'.....40%

Awl Hafts, See *Hafts, Awl.*

Awls—

Brad Awls:
Handled.....gro. $2.75@3.10
Unhandled, Shouldered..gro. 63@65¢
Unhandled, Patent.....gro. 66@70¢
Peg Awls:
Unhandled, Patent....gro. 31@34¢
Unhandled, Shouldered..gro. 65@70¢
Scratch Awls:
Handled, Common..gro. $3.50@4.00
Handled, Socket..gro. $11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

First Quality, best brands..$5.50@5.75
First Quality, other brands..$5.25@5.50
Jobbers' Special Brands:
Good Quality.....$4.50@4.75
Best Quality.....$5.00@5.25
Cheap, Handled Axes.....$5.50@5.75
Beveled, add 25c doz.

Axle Grease—See *Grease, Axle.*

Axles—Iron or Steel.

Concord, Loose Collar....4½@5¢
Concord, Solid Collar....4¾@5½¢
No. 1 Common.....5½@6¾¢
No. 1½ Com. New Style..5¼@6¼¢
No. 2, Solid Collar.....4¾@5¾¢
Nos. 11 to 14.....70@70&10%
Nos. 15 to 18.....75@75&10%
Nos. 19 to 23.....75@75&10%

5% cash 10 days.

Boxes, Axle—

Common and Concord, not turned..lb. 4½@4½¢
Common and Concord, turned.....lb. 4¾@5¢
Half Patent.....lb. 8@9¢

Balances—Sash—Spring—

Spring Balances....50&10@50&10&5%
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%
Perfection.....50%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb..2¾@3¢

Beams, Scale—

Scale Beams, List Jan. 12, '85.40&10%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters—Egg—

Standard Co.:
No. 5 Steel Handle Dover..₩ gro. $6.50
No. 10 Cast Handle Dover..₩ gro. $8.00
No. 10 Steel Handle Dover..₩ gro $8.00
No. 15 Extra Heavy Steel Handle, ₩ gro. $15.00
Rival, ₩ gro.....$14.00
Taplin Mfg. Co.:₩ gro.
No. 50 Small Family size.....$6.50
No. 100 Regular Family size.....$8.00
No. 102 Regular Family size tinned.....$9.50
No. 150 Large Family size.....$15.00
No. 152 Large Family size, tinned.....$17.00
Lyon's, Standard size.....₩ doz. $1.75
Wonder (S. S. & Co.).....₩ gro. $7.50

Bellows—

Blacksmith, Standard List..70@70&10%
C. E. Jennings & Co., Blacksmith..60&10%
C. E. Jennings & Co., Hand.....33⅓%

Blacksmiths—

Inch..	*2½*	*3*	*3¼*	*3½*	*4*
Each..	*$3.50*	*3.75*	*4.25*	*4.80*	*5.35*
Extra Length:					
Each..	*$4.00*	*4.55*	*5.10*	*5.80*	*6.40*

Inch..	*9*	*10*	*11*	*12*	*14*	*16*
Doz...	*$6.75*	*7.25*	*8.50*	*9.50*	*12.00*	*14.50*

Net Prices.

Hand—

Inch...	*6*	*7*	*8*	*9*	*10*	*12*
Doz....	*$3.75*	*4.25*	*4.50*	*5.00*	*5.7*	*6.75*

Bells—Cow—

Ordinary goods.....75&5@75&10%
High grade.....70@70&10%
Jersey.....75&10%
Texas Star.....50%

Door—

Abbe's Gong.....45%
Barton Gong.....55%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's....40@40&10%
Yankee Gong.....55%

Hand—

Hand Bells, Polished.....60&5@66⅔&5%
White Metal.....55@55&10%
Nickel Plated.....50@50&10%
Swiss.....60@60@71½%
Silver Chime.....33⅓@33⅓&10%

Miscellaneous—

Farm Bells.....lb. 2@2¼¢
Steel Alloy Church and School.....50&10&5@60%
National Bell Foundry Co.:
Superior Cast Steel Church and School Bells.....50&10&5@60%
Wilmot & Hobbs Mfg. Co., Gongs.....70%

Belting—Rubber—

Agricultural (Low Grade)..75&10@80%
Common Standard.....75@75&10%
Standard.....70@70&10%
Extra.....60@10@5%
High Grade.....50@10&50@10&5%
Boston Belting Co.:
Seamless Stitched, Imperial.....4¾&¾%
Boston.....50&5%
Niagara.....60&5%

Leather—

Extra Heavy, Short Lap...50@10@60%
Regular Short Lap 60@10@60@10@5%
Standard.....60@10@10@70@5%
Light Standard.....70@70@10%

Cotton—

Rossendale-Reddaway B. & H. Co.:
Sphinx Brand.....60&10%
Durable Brand.....70%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters.....40@50%

Bicycle Goods—

John S. Leng's Son's 1899 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—Tackle—

Common Wooden.....70&5@70&10%
Cleveland Steel.....60&10@70%
Ford's Star Brand Self Lubricating..60&10%
Hollow Steel, Ford's Pat. Star Brand.....50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50&10%
See also *Machines, Hoisting.*

Boards Stove—

Zinc, Crystal, &c.....40&10@...%

Bolts—Carriage, Machine &c.—

Common, list Jan. 30, '95..65&5@...%
Norway Iron, $3.00, list Oct. 7, '84..80@80&5%
Phila. Eagle, $3.00 list May 24, '99....80@80&10%
Bolt Ends, list Jan. 30, '95.70&7½@...%
Machine, list Oct. 1, '99.....70&5@...%
Machine with C. & T. Nuts.....65&10@...%

NOTE—*The rapid advances in manufacturers' prices enable the jobbers to cut prices freely.*

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz...	*$0.26*	*.30*	*.39*	*.47*	*.65*

Cast Iron Spring Foot:

Inch.....	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.25*	*1.75*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.75*	*1.05*	*1.30*

Cast Iron Shutter, Brass Knobs:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.87*	*.80*	*1.00*

Wrought Barrel Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz...	*$0.44*	*.50*	*.61*	*.70*	*1.28*

Wrought Barrel.....70@10@75&5%
Wrought " Bronzed..50&5@50&10%
Wrought Flush, B. K..50@10@60@10%
Wrought Shutter...40@10@10@60@5%
Wrought Square Neck.....50@50&10%
Wrought Sunk.....50@50&10%
Ives' Patent Door.....60%

Stove and Plow—

Plow.....60@10@...%
Stove.....77½%

Tire—

Common.....77½%
Norway Iron.....80@80@5%
American Screw Company:
Norway Phila., list Oct. 16, '84....82½%
Eagle Phila., list Oct. 16, '84.....85%
Bay State, list Dec. 28, '99.....77½%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84..82½%
Eagle Phila., list Oct. 16, '84.....85%
Eclipse, list Dec. 28, '99.....77½%
Port Chester Bolt & Nut Company
Empire, list Dec. 28, '99.....77½%
Keystone Phila. list Oct. '84.....85%
Norway Phila., list Oct. '84.....82½%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch.....	*1¼*	*1½*	*1¾*	*2*
Per doz..	*$4.30*	*5.00*	*5.75*	*7.25*
Inch			*2¼*	*2½*
Per Doz.....			*$8.65*	*11.50*

Enterprise Mfg. Co., No. 1, $1.35; No. 2, $1.65; No. 3, $2.50 each.....25%

Boring Machines—*See Machines, Boring.*

Boxes, Mitre—

C. E. Jennings & Co.....40%
Seavey's, per doz., $30.....40%

Braces—

NOTE.—*Most Braces are sold at net prices.*

Common Ball, American..$1.15@1.25
Barber's.....60&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 128, 207 to 414.....60%
C. E. Jennings & Co.....50&10%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Patent..50%
P., S. & W. Co Peck's Patent.....60&10@65&5%

Brackets—

Wrought Steel.....75&5@75&10%
Bradley's Wire Shelf:
Full cases.....80%
Broken cases.....75&10%
Griffin's Pressed Steel.....75%
Griffin's Folding Brackets.....70&10%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—

Wire Goods Co.....75%

Buckets, Well and Fire—See *Pails*

Bucks, Saw—

Boss.....₩ gro. $48.00
Hoosier.....₩ gro. $36.00

Bull Rings—See *Rings, Bull.*

Butts—Brass—

Wrought list Sept., '96.....40@40@5%
Cast Brass, Tiebout's.....50%

Cast Iron—

Fast Joint, Broad.....50@50&10%
Fast Joint, Narrow.....50@50&10%
Loose Joint.....70&5@70&10%
Loose Pin.....70&5@70&10%
Mayer's Hinges.....70&5@70&10%
Parliament Butts.....70&5@70&10%

Wrought Steel—

Table and Back Flaps...60&10%
Narrow and Broad.....60&10%
Inside Blind.....60%
Loose Pin.....60&10%
Loose Pin, Ball and Steeple Tip.....70&10%
Japanned, Ball Tip Butts...60%
Bronzed Wrt. Nar. and Inside Blind Butts.....45&20@45&15%

Extra 25@35&5%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 600 and 900 series.....40&10%
Hendryx Bronze:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong.....per lb..3½@4¢
Sharp, 1 prong.....per lb... 4@4½¢
Perkins' Blunt Toe.....₩ lb 3½¢
Perkins' Sharp Toe.....₩ lb 4 ¢

Can Openers—See *Openers, Can*

Cans, Milk—

	5	8	10 gal.	
Illinois Pattern.	$1 75	2.10	2.25	each.
Iowa Pattern....	....	2.40	2.60	each,
Buffalo Pattern.	....	2.30	2.50	each.
	20	30	40	qts.
New York Patt'rn	3.00	3.25	3.40	each.
Baltimore Patt'rn	2.50	2 85	3.10	each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$48.00	60.00	108 gro

Caps—Percussion—

Eley's E. B.....	.60c
G. D.....	per M 32@34c
F. L.....	per M 37@40c
G E.....	per M 47@50c
Musket.....	per M 57@60c

Primers—

Berdan Primers, $1.00.....5%
B. L Caps (Sturtevant Shells) $1.00.....5%
All other primers.....$1.10@$1.15

Carpet Stretchers—See *Stretchers, Carpet.*

Cartridges—

Blank Cartridges:
22 C. F., $5.50 .....10c&5@10c&10%
32 C. F., $7.00.....10c&5@10c&10%
22 cal. Rim, $1.50.....10c&5@10c&10%
32 cal. Rim, $2.75.....10c&5@10c&10%
B. B. Caps, Con...Ball Swgd. $1.80@1.85
B. B. Caps, Round Ball...$1.10@1.15
Central Fire .....25@25c&5%
Pistol and Rifle.....15c&5@15c&10%
Primed Shells and Bullets.....
15c&5@15c&10%
Rim Fire Sporting.....50@50c&5%
Rim Fire, Military ....15c&5@15c&10%

Casters—

Bed.....70@70c&10%
Plate.....75@75c&10%
Philadelphia.....75@75c&10%
Boss.....70&10%
Boss Anti-Friction.....70&10%
Martin's Patent (Phoenix).....45%
Payson's Anti-Friction .....70&10&10&10%
Standard Ball Bearing.....45%
Tucker's Patent, low list.....90%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Coil—

NOTE.—*The following prices are f. o. b. Pittsburgh. Manufacturers in quoting usually add freight to destination.*
American Coil, Cask lots:

3-16	5-16	⅜	7-16	½	9-16
7.75	5.80	4.85	4.00	3.85	3.75	3.55

¼ ⅝ to 1 in. 1⅛ to 1¼ inch.
3.50 3.50 per lb. 3.75 per 100 lb.
Less than Cask lots add 25c.
German Coil, list July 2%, '97.60&10c&10%

Halters and Ties—

Halter Chains.....50c&10%
German Halter Chain, list July 2%, '97.....60c&10c&10%
Cow Ties.....60%

Trace, Wagon, &c.—

Traces, Western Standard: 100 pair
6¼—6-3, Straight, with ring...$30.00
6¼—6-2, Straight, with ring..$31.00
6¼—8-2, Straight, with ring..$35.00
6¼—10-2, Straight, with ring...$38.00
Add 2c per pair for Hooks.
Twist Traces 2¢ per pair higher than Straight Link.
Trace, Wagon and Fancy Chains.....
50&10@50c&10c&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron.....60@60c&10%
Brass.....60@60c&10%
Safety Chain.....70&5@70c&10%
Gal. Pump Chain.....lb. 4½@4½c
Covert Mfg. Co.:
Breast.....35&2%
Halter.....35&2%
Heel.....35&2%
Rein.....35&2%
Stallion.....35&2%
Covert Sad. Works:
Breast.....70%
Halter.....70%
Hold Back.....70%
Rein.....70%
Oneida Community:
Am. Coil and Halters....50&10&5@60%
Am. Cow Ties.....35&5@40&5%
Eureka Coil and Halter.....60@40&5%
Niagara Coil and Halter.....60@60&5%
Niagara Cow Ties.....45&5@45&10&5%
Wire Goods Co.:
Dog Chain.....60&10%
Universal Dbl-Jointed Chain.....50%

Chalk—(From Jobbers.)

Carpenters' Blue.....gro. 42@45c
Carpenters', Red .....gro. 57@40c
Carpenters', White.....gro. 33@35c
See also Crayons.

Chalk Lines—See *Lines.*

Checks, Door—

Bardsley's.....40&10%
Columbia.....50&10%
Eclipse.....60@60&10%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemens' Chests, with Tools.....30%
Farmers', Carpenters', etc., Chests, with Tools.....20%
Machinists' and Pipe Fitters' Chests, Empty.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....30%

Chisels—

Socket Framing and Firmer

Standard List.....70c&5@70c&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer
No. 10.....60&10%
C. E. Jennings & Co. Socket Framing
No. 15.....60&10%
Swan's.....70&5%
L. & L. J. White.....30@30&5%

Tanged—

Tanged Firmers.....40c&5@40&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 191, 181....25%
L. & L. J. White, Tanged.....25&5%

Cold—

Cold Chisels, good quality..lb. 13@15c
Cold Chisels, fair quality...lb. 11@12c
Cold Chisels, ordinary.....lb. 8@9c

Chucks—

Beach Pat., each $8.00.....20%
Massey's Planer and Milling.....15@20%
Skinner Patent Chucks:
Combination Lathe Chucks.....40%
Drill Chucks, Patent and Standard...30%
Drill Chucks, New Model.....2 %
Independent Lathe Chucks.....40%
Improved Planer Chucks.....35%
Universal Lathe Chucks.....40%
Face Plate Jaws.....40%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination.....40%
Czar Drill.....30%
Geared Scroll.....30%
Independent.....40%
Union Drill.....30%
Universal.....40%
Face Plate Jaws.....35%

Clamps—

Adjustable, Hammers'.....20@20&5%
Cabinet, Sargent's.....50&10%
Carriage Makers', P., S. & W. Co. 40&10%
Carriage Makers' Sargent's.....50&10%
Beaty, Parallel.....33⅓&10%
Lineman's, Utica Drop Forge & Tool Co.....40%
Saw Clamps, see *Vises, Saw Filers'.*

Cleaners Sidewalk—

Star Socket, All Steel....₱ doz. $4.00 net
Star Shank, All Steel....₱ doz. $3.75 net
W. & C. Shank, All steel, 7½ in. ₱ doz., $3.05; 8 in., $3.10; 8½ in., $3.25.

Cleavers, Butchers'—

Foster Bros.....30%
New Haven Edge Tool Co.'s.....40%
Fayette R. Plumb.....33⅓&10%
P., S & W.....50&50&5%
L. & L. J. White.....25%

Clippers—

Chicago Flexible Shaft Company
Handy Toilet.....₱ doz. $7.20
Mascotte Toilet.....₱ doz. $8.40
Monitor Toilet.....₱ doz. $9.00
Stewart's Patent.....₱ doz. $10.00

Clips Axle—

Eagle and Superior ¼ and 5-16 inch.....70c&10%
Norway, ¼ and 5-16 inch..70@70c&10%

Cloth and Netting, Wire—See *Wire, &c.*

Cocks, Brass—

Hardware list:
Compression and Plain Bibbs.65c&5%
Globe, Kerosene, Racking, &c., Cocks.....65c&10%

Coffee Mills—See *Mills, Coffee.*

Collars Dog—

Brass, Pope & Stevens' list.....40%
Embossed, Gilt, Pope & Stevens' list30&10%
Leather Pope & Stevens' list.....40%

Compasses, Dividers, &c.

Ordinary Goods.....70c&10@75%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Call's Patent Inside.....55%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....60%
Compasses.....50%
J. Stevens A. & T. Co.....25&10%

Compressers Corn Shock—

J. B. Hughes' ₱ doz.....$2.50

Conductor Pipe, Galva.—

L. C. L. to Dealers:

Territory.	Not nested.	Nested.
Eastern....	70c&2½%	70c&5%
Central.....	65c&10%	70%
Southern..	65%	65c&2½%
S. Western.	60c&12½%	60c&15%

Terms, 2% for cash.
Jobbers receive extra 12½&2½ on carloads loose, and extra 12½ on carloads crated.
See also *Eave Troughs.*

Coolers, Water—

Nos....	2	3	4	6
Labrador	$11.50	$14.00	$17.50	$20.00
8 gal. $23.00				

Nos	3	4	6	8
Iceland..	$23.00	$25.00	$30.00	$37.50
10	14 gal. $57.00	$72.00		

Coopers' Tools—

See *Tools, Coopers'.*

Cord— Sash—

Braided, Drab.....lb. 25c
Braided, White, Common..lb. 17@18c
Cable Laid Italian...lb. A, 13c; B, 16c
Common India.....lb 9 @9½c
Cotton Sash Cord, Twisted....13@16c
Patent Russia.....lb. 12½@13c
Cable Laid Russia.....lb. 13½@14c
India Hemp, Braided.....lb 14@15c
India Hemp, Twisted.....lb. 10@12c
Patent India, Twisted.....lb.10@12c
Pearl Braided, cotton .....₱ ᵬ 17@18¢
Massachusetts, White .....₱ ᵬ 22½¢
Massachusetts, Drab.....₱ ᵬ 26½¢
Eddystone Braided Cotton.....₱ ᵬ 14¢
Harmony Cable Laid Italian.....₱ ᵬ 18¢
Ossawan Mills:
Crown, Solid Braided White...₱ ᵬ 22¢
Braided, Giant, White.....₱ ᵬ 20¢
Peerless:
Cable Laid Italian.....16¢
Cable Laid Russian.....14¢
Cable Laid India.....12¢
Braided India.....18¢
Phœnix, White.....19¢
Samson, Nos. 7 to 12:
Braided, Drab Cotton .....₱ ᵬ 32½¢
Braided, Italian Hemp.....₱ ᵬ 32½¢
Braided, Linen .....₱ ᵬ 49¢
Braided, White Cotton, Spot..₱ ᵬ 28½¢
No. 6 cords, 1¢ extra.
Silver Lake:
A quality, Drab, 40¢.....15%
A quality, White, 35¢.....15%
B quality, Drab, 35¢.....15%
B quality, White, 30¢.....15%
Italian Hemp, 40¢ 15%
Linen, 57½¢.....15%

Wire, Picture—

Braided or Twisted.....85@85c&10%
Note.—There is a good deal of confusion in lists, some using old list and others the new list.

Corn Knives and Cutters—See *Knives, Corn.*

Corn Planters—

See *Planters, Corn.*

Crackers, Nut—

Little Giant.....₱ gr. $24.00

Cradles—

Grain.....50%

Crayons—

White Round Crayons, gross..5½@6c
Cases, 100 gro., $4.50, at factory.
D. M. Steward Mfg. Co.
Metal Workers' Crayons.gr. $2.50
Soapstone Pencils, round, flat or square.....gr.$1.50
Rolling Mill Crayons.....gr. $2.50
Railroad Crayons (composition) gr. $2.00
Cake lots 20%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crooks, Shepherds'—

Fort Madison, Heavy .....₱ doz. $7.00
Fort Madison, Light.....₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden .....₱ doz. $10.00

Cutlery, Table—

International Silver Company:
No. 12 Medium Knives, 1847..₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....₱ doz. $3.00
Wm. Rogers & Son.....₱ doz. $2.50
Simeon L. & Geo. H. Rogers Company:
12 dwt Medium Knives.....₱ doz. $3.00
No. 77 Medium Knives.....₱ doz. $2.50

Cutters— Glass—

H. H. Mayhew Co.....40%
Smith & Hemenway Co.....50%

Meat—

Hale's...Nos. 11 & 111 12 & 112 13 & 113
Per doz .. $10.80 13.20 18.00
American.....30%

Nos.....	1	2	3	4	B	5
Each.....	$5	$7	$10	$25	$50	$60

Connecticut.....50%

No...	20	40	60	8	10	12
Each	$1.75	2.00	2.25	3.00	3.00	4.00

Enterprise.....25@25&7½%

Nos.....	5	10	12	22	32
Each.....	$2	$3	$2.50	$4	$6

Dixon's, ₱ doz.....30&10@40%

Nos.....	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Home No. 1, ₱ doz. $22.75 .....50&10%
Little Giant, ₱ doz.....33⅓&5@40%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$75.00	$68.00

Sterling.....33⅓&5%

Nos.....	1	2
Each.....	$3.00	$2.50

New Triumph No. 605, ₱ doz. $24.00 ..
30&10@10%
Woodruff's, ₱ doz .....30&10@40%

Nos.....	100	150
	$15.00	$18.00

Chadborn's Smoked Beef Cutter, ₱ doz. $60.00
Enterprise Beef Shavers..... .25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9..55%
Kraut Cutters 36 x 12, 40 x 12.....40%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife, ₱ gr....$18@$20
Slaw Cutters, 2 Knife, ₱ gr....$22@$36

Tobacco—

All Iron, Cheap.....doz. $1.25@$1.50
Enterprise.....25@50%
National, ₱ doz. $21.00.....40%
Sargent's, ₱ doz., No. 2.....45&10%
Sargent's No 12 and 21 .....50&10%

Washer—

Appleton's, ₱ doz. $16.00....50&10&10%
Bonney's.....40%

Diggers, Post Hole, &c.—

Dalbey Post Hole Auger...per doz., $9.00
Iwan's Improved Post Hole Auger....40%
Iwan's Perfection Post Hole Digger...
₱ doz. $9.00
Kohler's Universal.....₱ doz. $14.00
Kohler's Little Giant.....₱ doz. $14.00
Kohler's Hercules.....₱ doz. $12.00
Kohler's Invincible.....₱ doz. $10 00
Kohler's Rival.....₱ doz. $9.00
Kohler's Pioneer.....₱ doz. $9.00
Never-Break Post Hole Diggers, ₱ doz. $24.00.....60%
Samson, ₱ doz. $34.00.....25%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—

See *Checks, Door.*

Door Springs—

See *Springs, Door.*

Doors, Screen—

Porter's Plain, No. 6.....₱ doz. $6 50
Porter's Ornamental, No. 70. ₱ doz. $10.00

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ₱ doz. $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—

See *Knives, Drawing.*

Drills and Drill Stocks—

Common Blacksmiths' Drill...each $1.50@$1.75
Blacksmiths' Self-feeding.....each $3.75@4.00
Breast, Millers Falls, each $3.00 .15&10%
Breast, P., S. & W .....40@40&5%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills Nos. 2 and 3.....16@16&5%
Johnson's Drill Points.....25&10%
Ratchet, Curtis & Curtis 25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....20@25%
Ratchet, Whitney's, P., S. & W.....50%
Whitney's Hand Drill No. 1, $10.00.....
Adjustable, No. 10, $12.00.....33⅓&5%

Twist Drills—

Standard List.....60c&5@65c&5%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—

See *Pans, Dripping.*

Drivers, Screw—

Screw Driver Bits ...per doz. 45@70c
Balsey's Screw Holder and Driver, ₱ doz. 2-inch, $6; 4-in., $7.50 6-in., $9..40%
Buck Bros.....30%
Buck Bros' Screw Driver Bits.....30%
Champion.....40&10%
Douglass Mfg. Co.....20@20&10%
Fray's Hol. Hdle Sets, No. 8, $12.00 50%
Gay's Double Action Ratchet.....35%
Goodell's Automatic
50&10&10@50&10&10&5%
Mayhew's Black Handle.....50%
Mayhew's Monarch.....40&10%
New England Specialty Co.....50&10%
Sargent & Co.'s:
Nos. 1,50,55 and 60.....50&10&10%
Nos. 20 and 40.....60½&10%
Smith & Hemenway Co .....40&5%
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles.....60&10%
No. 86.....70&10%
Swan's:
Nos. 65 to 68.....50%
No. 40.....40&10%
Nos. 25, 35 and 45.....20&10&10%

Eave Trough Galvanized

Territory. *L. C. L.*
Eastern.....75c&10%
Central.....75c&7½% } Carlots extra 12½%
Southern.....70c&12½%
S. Western.....70c&10%
Terms, 2% for cash.
See also *Conductor Pipe and Elbows.*

Egg Beaters—See *Beaters, Egg*

Egg Openers—

See *Openers, Egg.*

Elbows and Shoes—

Factory shipments.....60@60&10%
Perfect Elbows (S. S. & Co.).....60%

Emery, Turkish—

	4 to 6	5½ to 15	Flour
Kegs.....	lb. 5c	5½c	8½c
½ *Kegs*.....	lb. 5½c	5¾c	8¾c
Kegs.....	lb 5c	6c	
10-lb cans, 10 in case	6½c	7c	6c
10-lb. cans, less than 10	10c	10c	8c

NOTE.—*In lots 1 to 3 tons a discount of 10% is given.*

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—

See *Pins, Escutcheon.*

Extractors, Lemon Juice—See *Squeezers, Lemon.*

Fasteners, Blind—

Zimmerman's .....50&10%

Faucets—

Cork Lined.....70c&5@70c&10c&5%
Metallic Key, Leather Lined.....
70@70c&10%
Red Cedar.....50@50c&5%
B. & L. B. Co.:
Lockport, Metal Plug, reduced list60&5%
Star.....60@60&5%
Star, Metal Plug new list....40@40&5%
West's Lock, Open and Shut Key50&10%
John Sommer's Peerless Tin Key.... 40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Metal Key.50&10%
John Sommer's Duplex Metal Key....60%
John Sommer's Diamond Lock.....40%
John Sommer's L. X. L. Cork Lined...50%
John Sommer's Reliable Cork Lined.
50&10%
John Sommer's Chicago Cork Lined..60%
John Sommer's O. K. Cork Lined.....50%
John Sommer's No Brand, Cellar.....50%
John Sommer's Perfection Cedar....40%
McKenna, Brass:
Burglar Proof, N. P.....35%
Improved, ¾ and ⅞ inch.....35%
Self Measuring:
Enterprise, ₱ doz. $30.00 .....40&10%
Lane's, ₱ doz. $36.00 .....40&10%
National Measuring, ₱ doz. $36.00...40%

Felloe Plates—

See *Plates, Felloe.*

Files—Domestic—

List revised Nov. 1, 1899.

Best Brands.....	70@75&5%
Good Brands.....	75&10@75c&10c&10%
Fair Brands.....	80@80c&10%
Second Quality.....	80c&10@80c&25%

Imported—

Stubs' Tapers, Stubs' list, July 2%, '97.....25%

Fixtures, Grindstone—

Net Prices:

Inch....	15	17	19	21	24
Per doz.	$2.60	2.75	3.00	3.50	4.40

P., S. & W. Co.....50@50&5%
Reading Hardware Co.....60%
Sargent's.....60&10&10%
Stowell's Giant Grindstone Hanger.....
₱ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy.....50&10&10%
Stowell's Grindstone Fixtures Light.....
60&10%

Fodder Squeezers—

See *Compressors.*

Forks—

Sept. 1, 1900, list.
Grain or Barley Forks, 12 to 20 inches.....70c&5%
Hay, 2 tine.....65%
Hay, 3 tine.....66⅔%
Hay, 4 tine. Header and Barley Forks, 13 to 16 inches.....66⅔%
Manure, 4 tine 70%
Manure, 5 and 6 tine.....70%
Spading.....70c&5%
Iowa Dig-Easy Potato.....65%
Victor, Hay.....60&5%
Victor, Manure.....70%
Victor, Header.....60&30%
Champion, Hay.....60 %
Champion, Manure.....70%
Columbia, Hay.....66⅔&5%
Columbia, Manure 70%
Columbia, Spading 70%
Hawkeye Wood Barley 4 tine ₱ doz. $5.00; 6 tine, $6.00.
W. & C. Potato Digger.....65%
Acme Hay.....60&10&7½%
Acme Manure, 4 tine.....60&20&10%
Acme Manure, 6 tine.....60%&10&2%
Dakota Header.....65&15&5%
Jackson Steel Barley.....65&15&5%
Kansas Header.....66⅔%
W. & C. Favorite Wood Barley 4 tine, ₱ doz., $5.00; 6 tine, $6.00
Plated.—See *Spoons.*

Frames—Saw—

Red, Polished and Varnished...doz. $1.15@$1.40
White.....doz. 75@80c

Screens and Frames—

See *Screens.*

Freezers, Ice Cream—

Qts...	2	3	4	6	8	10
Best.	$1.45	1.65	1.95	2.40	3.20	4.00
Good	$1.25	1.40	1.70	2.15	2.75	3.75
Fair.	$1.00	1.10	1.50	1.75	2.30	2.90

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— Per 1000 Feet.

Hemp Fuse.....$2.60
Cotton Fuse.....2.90
Single Taped Fuse.....3.25
Double Taped Fuse.....4.20
Triple Taped Fuse.....5.00

Gates, Molasses and Oil-Stables
...30@30&10%

Gauges—
Marking, Mortise, &c.
...55&10@55&10@10%
Barrett's Comb. Roller Gauge
...₱ doz. $6.75@7.25
Stanley R. & L. Co.'s Butt & Babbet Gauge
...20&10%
Wire, Brown & Sharpe's
...25%
Wire, Morse's
...25%
Wire P., S. & W. Co
...30@30&10%

Gimlets—Single Cut—
Nail, Metal, Assorted gro. $1.40@1.60
Spike, Metal, Assorted gro. $2.80@3.25
Nail, Wood Handled, Assorted, gro. $1.75@3.00
Spike, Wood Handled, Assorted gro. $3.25@3.50

Glass, American Window
Jobbers' List, Jan. 21, 1901
Less than Carloads
...80&10%
Carloads
...85&5%
500 Boxes
...87%

Glue—Liquid, Fish—
List A, Bottles or Cans, with Brush.
...57½@50%
List B, Cans (½ pts., pts., qts.)
...55@45%
List C, Cans (½ gal., gal.)
...25@45%
International Glue Co. (Martin's)
...40&10&5%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Common Grade
...*gro. $5.00@6.00*
Dixon's Everlasting, 10-₱ pails, ea. 85¢
Dixon's Everlasting, in bxs., ₱ doz. 1 ₱ $1.20; 2 ₱ $2.00
Snow Flake: 1 qt. cans, per doz. $2.00; 2 qt., $3.20; 1 gal. cans per doz. $6.00; 3 gal. $16.00; 5 gal. $24.00
...10%

Grindstones—
Bicycle Grindstones, each
...$2.50@3.00
Pike Mfg. Co:
Improved Family Grindstones, per inch, per doz.
...$2.00
Pike Mowe Knife and Tool Grinder, each
...$6.00
...35&4%
Velox Ball Bearing, mounted, Angle Iron Frames
...each, $3.25

Guards, Snow—
Cleveland Wire Spring Co.:
Galv. Steel ₱ 1000
...$9.00
Copper ₱ 1000
...$18.00

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
gro.
Peg Patent, Leather Top
...$4.90@5.25
Peg Patent, Plain Top
...$3.50@3.75
Sewing, Brass Ferrule
...$1.50@1.60
Saddlers', Brass Ferrule
...$1.35@1.45
Pegging, Common
...$1.25@1.35
Brad, Common
...$1.50@1.75

Halters and Ties—
Covert Mfg. Co.:
Web
...45&2%
Jute Rope
...45&2%
Sisal Rope
...30&2%
Covert's Saddlery Works:
Web and Leather Halters
...70%
Jute and Manila Rope Halters
...70%
Sisal Rope Halters
...60&20%
Jute, Manila and Cotton Rope Ties
...70%
Sisal Rope Ties
...60&20%

Hammers—
Handled Hammers—
Heller's Machinists'
...50@50&5%
Heller's Farriers
...50@50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75
...40&10%
Peck, Stow & Wilcox
...50&10%
Fayette R. Plumb:
Plumb, A. E. Nail
...40&10&7½%
Engineers' and B. S. Hand
...60&10&2½%
Machinists' Hammers
...60%
Riveting and Tinners'
...40&10&7½%
Sargent's C. S. New List
...45%

Heavy Hammers and Sledges—
3 lb. and under
...*lb. 45c*
3 to 5 lb
...*lb. 36c*
...80&10@80
Over 5 lb
...*lb. 30c*
...&10@10%
Wilkinson's Smiths'
...9½c@10c lb.

Handcuffs and Leg Irons
See *Police Goods.*

Handles—
Agricultural Tool Handles—
Axe, Pick, &c
...60@60&10%
Hoe Rake, Fork, &c
...60@60&10%
Shovel, &c., Wood D Handle
...50@50&5%

Cross-Cut Saw Handles—
Atkins'
...40&5%
Champion
...45@45&10%
Disston'
...50%

Mechanics' Tool Handles—
Auger, assorted
...*gro. $2.50@2.50*
Brad Awl
...*gro. $1.25@1.50*
Chisel Handles:
Apple Tanged Firmer, gro. ass'd. $2.25@2.35; large, $2.50@2.60.
Hickory Tanged Firmer, gro. ass'd $1.75@2.20; large, $2.50@2.70.
Apple Socket Firmer, gro. ass'd, $1.70@1.85; large, $2.00@2.25
Hickory Socket Firmer, gro ass'd. $1.60@1.75; large, $1.75@2.00
Hickory Socket Framing, gro. ass'd. $2.50@2.75; large, $2.65@2.85
File, assorted
...*gro. $1.00@1.15*
Hammer, Hatchet, Axe, &c
...60%
Hand Saw, Varnished, doz. 70@75c
Not Varnished
...55@60c
Plane Handles:
Jack, doz. 25c; Jack Bolted
...55@60c
Fore, doz. 35@38c; Fore, Bolted
...70@75c
Nicholson Simplicity File Handle, ₱ gro.
...$0.85@$1.50

Hangers—
Barn Door, New Pattern, Round Groove, Regular:

Inch	3	4	5	6	8
Doz	$0.85	1.20	1.50	1.90	2.50

Barn Door, New England Pattern, Check Back, Regular:

Inch	3	4	5	6
Doz	$1.30	1.75	2.50	3.00

Chicago Spring Butt Co.:
Friction
...25%
Oscillating
...25%
Big Twin
...25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door
...50%
Elevator
...40%
Railroad
...55%
Cronk Hanger Co.:
Loose Axle
...60%
Roller Bearing
...60&10%
Lane Bros.:
Parlor, Ball Bearing
...$4.00
Parlor, Standard
...$3.25
Parlor, New Model
...$2.75
Parlor New Champion
...$2.25
Barn Door, Standard
...60&10%
Covered
...50&10&10&5%
Special
...60&10%
Lawrence Bros.:
Advance
...60%
Cleveland
...70%
Crown
...60%
New York
...60%
Peerless
...60&10%
Sterling
...60%
McKinney Mfg. Co.:
No. 1, Special, $15
...60&10%
No. 2, Standard, $18
...60&10%
Stowell Mfg. and Foundry Co.:
Acme Parlor Ball Bearing
...40%
Atlas
...60%
Badger Barn Door
...50%
Baggage Car Door
...50%
Climax Anti-Friction
...50%
Elevator
...40%
Express
...50%
Interstate
...60%
Lundy Parlor Door
...50%
Magic
...50%
Matchless
...60%
Nansen
...60&10%
Railroad
...50%
Street Car Door
...50%
Steel, Nos. 300, 404, 500
...40&15%
Stowell Parlor Door
...50%
Wild West, Nos. 300, 400, 500
...5%
Zenith for Wood Track
...50%
Taylor & Boggis Foundry Co.:
Kidder's
...50&15&10&5%
Columbian Hdw. Co.:
American Trackless
...35½&10%
Wilcox Mfg. Co.:
Bike Roller Bearing
...60&10%
C. J. Roller Bearing
...60&10%
Cycle Ball Bearing
...50%
Dwarf Ball Bearing
...40%
Ives, Wood Track
...60&10%
L. T. Roller Bearing
...60&10&5%
New Era Roller Bearing
...50&10%
O. K. Roller Bearing
...60&10&5%
Prindle, Wood Track
...60%
Richards' Wood Track
...60%
Richards' Steel Track
...50&10%
Spencer Roller Bearing
...60&10%
Tandem Nos. 1 and 2
...60%
Underwriters' Roller Bearing
...40%
Wilcox Auditorium Ball Bearing
...20%
Wilcox Barn Trolley No. 128
...40%
Wilcox Fire Trolley, Roller Bearing
...30%
Wilcox Le Roy Noiseless Ball Bearing
...40%
Wilcox New Century
...50&10&10%
Wilcox Trolley Ball Bearing
...40%

Extra 5@10% often given.

Harness Menders—See *Menders.*

Harness Snaps—See *Snaps.*

Hasps—
McKinney's Perfect Hasp ₱ doz.
...50%
Wrought Hasps, Staples, &c.—See *Wrought Goods.*

Hatchets—
Best Brands
...*60@50&10%*
Cheaper Brands
...*60@60&10%*
Note.—Net prices often made.

Hay and Straw Knives—
See *Knives.*

Hinges—
Blind and Shutter Hinges—
Surface Gravity Locking Blind: (Victor; National; 1888 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	1	3	5
Doz. pair	$0.75	1.45	2.90

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	1	1½	2	2½
Doz. pair	$0.60	.55	.52	.45

Mortise Reversible Shutter, (Buffalo, &c.)

No.	1	1½	2
Doz. pair	$0.65	.60	.55

North's Automatic Blind Fixtures, No. 2, for Wood, $0.00; No. 3, for Brick, $11.50
...10%
Parker
...70@75%
Reading's Gravity
...75&10%
Sargent's, Nos. 1, 3, 5, 11 & 13
...70&10@70&20%
Stanley's Steel Gravity Blind Hinges, ₱ doz. sets, without screws, $0.80; with screws, $1.15.
Wrightsville H'dware Co.:
O. S. Lull & Porter
...80&2½%
Acme, Lull & Porter
...75&10%
Queen City Reversible
...75&10%
Stenger's Positive Locking, Nos. 1 & 3
...70&10&5%
Shepard's Noiseless, Nos. 60, 65, 55
...70&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5
...75&7½%
1888, Old Pat'n, Nos. 1, 3 & 5
...75&7½%
Tip Pat'n, Nos. 1, 3 & 5
...75&7½%
Buffalo Gravity Locking, Nos. 1, 3 & 5
...75&7½%
Shepard's Double Locking, Nos. 20 & 25
...70&10%
Champion Gravity Locking, No. 75
...75&7½%
Steamboat Gravity Locking, No. 10
...75&7½%
Pioneer, Nos. 060, 45 & 5½
...75&7½%
Empire, Nos. 101 & 103
...70&7½%
W. H. Co.'s Mortise Gravity Locking, No. 2
...60&10%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	1	2	3
Hinges with Latches	$1.80	1.90	2.65
Hinges only	$1.20	1.40	2.00
Latches only	.60	.60	.65

New England:
With Latch
...*doz.* ...@$1.55
Without Latch
...*doz.* ...@$1.25
Reversible Self-Closing:
With Latch
...*doz.* ...@$1.80
Without Latch
...*doz.* ...@$1.45
Western:
With Latch
...*doz. $1.40@1.75*
Without Latch
...*doz. $0.95@1.20*
Wrightsville H'dware Co.:
Shepard's or Clark's, doz. sets,

No.	1	2	3
Hinges with Latches	$1.80	2.00	2.75
Hinges only	1.20	1.50	2.10
Latches only	.65	.65	.70

Spring Hinges—
Holdback, Cast Iron, gro. $7.00@7.85
Non-Holdback, Cast Iron
...*gro. $5.50@5.75*
J. Bardsley
Bardsley's Patent Checking
...15%
Bommer Bros.:
Bommer Ball Bearing Floor Hinges
...40%
Bommer Spring Hinges
...40%
Chicago Spring Butt Co.:
Chicago
...25%
Floor Hinge
...50%
Garden City Engine House
...25%
Keene's Saloon Door
...25%
Triple End
...50%
Hoffman Hinge & Foundry Co.:
No. 70 & 80 Holdback Detachable $8.50
Lawson Mfg. Co.:
Matchless
...85%
Matchless Pivot
...45%
Payson Wfg. Co.:
Oblique
...50&10%
Stover Mfg. Co.:
Ideal, No. 16, Detachable, ₱ gr.
...$12.50
Ideal, No. 4
...₱ gr. $9.00
New Idea No. 1
...₱ gr. $9.00
New Idea, Double Acting
...45%
Columbian Hdw. Co.:
Acme, Wrt. Steel
...80%
Acme, Brass
...20%
American
...30%
Columbia, No. 14
...₱ gr. $9.00
Columbia, No. 18
...₱ gr. $26.00
Columbia, Adjustable
...30%
Gem, new list
...25%
Clover Leaf
...₱ gr. $12.50
Oxford new list
...25%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list Mar. 15, 1901:
Light Strap Hinges
...75%
Heavy Strap Hinges
...80%
Light T Hinges
...70%
Heavy T Hinges
...66⅔%
Extra Heavy T Hinges
...75&10%
Hinge Hasps
...60%
Cor. Heavy Strap
...80%
Cor. Ex. Heavy T
...75&10%
Screw Hook and Strap: 6 to 12 in
...*lb. 3½c*
14 to 20 in
...*lb. 3 c*
22 to 36 in
...*lb. 2½c*
Screw Hook and Eye:
¾ to 1 inch
...*lb. 5 c*
¼-inch
...*lb. 6 c*
⅜-inch
...*lb. 7 c*

Extra $0@25%

Miscellaneous—
Hoffman's Steel Spring Butt Hinges
...40&10%
Hoffman's Offset Refrigerator Hinges
...40&10%

Hods, Coal—

	15 inch.	16 inch.	17 inch.	18 inch.	
Galv. Open	$2.70	3.00	3.30	3.60	₱ doz.
Jap. Open	$2.10	2.40	2.70	3.00	₱ doz.
Galv. Fun'el	$3.30	3.60	3.90	4.20	₱ doz.
Jap. Funnel	$2.70	3.00	3.30	3.60	₱ doz.

Hoes—Eye—
Scovil and Oval Pattern
...*60c&5@60c&10c&5%*
Grub, list Feb. 23, 1899
...*70c&5@70c&10%*
D. & H. Scovil
...35%

Handled—
Sept. 1, 1900, List:
Field and Garden
...75&2%
Ladies', Boys', Toy and Onion
...70c&10c&10%
Street and Mortar
...75c&7½&2%
Cotton
...70c&10c&10c&5&2%
Planters'
...70&30%
Weeding
...75%
Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices.
Ft. Madison Crucible Garden Hoe
...75&2%
Ft. Madison Crescent Cultivator Hoe, per doz.
...75&10&2%
Ft. Madison Mattock Hoes:
Regular Weight
...₱ doz. $4.50
Junior Size
...₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz. $4.80
Ft. Madison Dixie Tobacco Hoe
...75&20%
Kretsinger's Cut Easy, per doz.
...75&2%
Warren Hoe
...60%
W. & C. Ivanhoe
...75&2%
B. B. Cultivator Hoe
...75&10&2%
Acme Weeding
...75&10&2%
W. & C. Lightning Shuffle Hoe, ₱ doz.
...$4.85

Hog Rings and Ringers—
See *Rings and Ringers.*

Hoisting Apparatus—
See *Machines, Hoisting.*

Hollow Ware—
See *Ware, Hollow.*

Holders—Bolt—
Angular, ₱ doz. $24.00
...45&10%

Door—
Empire
...50%

File and Tool—
C. E. Jennings & Co. Model Tool Holders
...33⅓%
Nicholson File Holders and File Handles
...33⅓%

Hooks—Cast Iron—
Bird Cage, Reading
...60%
Bird Cage, Sargent's List
...50&10@60%
Ceiling, Sargent's List
...40&10%
Clothes Line, Hoffman's
...40&10%
Clothes Line, Reading List
...65&10@65&10&10%
Clothes Line, Sargent's List
...50&10@50&10%
Coat and Hat, Sargent's List
...45&10%
Clothes Line, Stowell's
...70%
Coat and Hat, Stowell's
...70%
Coat and Hat, Reading
...70@75%
Coat and Hat, Wrightsville
...65&10%
Harness, Reading List
...70&10@75%

Wire—
Belt
...*80%*
Wire C. & H. Hooks
...*60c&10@60c&10c&5%*
Atlas, Coat and Hat:
Single Cases
...45%
10 Case Lots
...45&10%
Czar Harness
...50&10&5%
Wire Coat and Hat:
Acme
...60%
B. B.
...60%
V Brace, Chief and Czar
...60%
Gem
...60%
Bright Wire Goods—See *Wire.*

Wrought Iron—
Box, 6 in., per doz. $1.50; 8 in., $1.75; 10 in., $2.00.
Cotton
...*doz. $1.05@1.25*
Wrought Staples, Hooks, &c.—
See *Wrought Goods.*

Miscellaneous—
Bush, Light, doz. $5.50; Medium, $6.00; Heavy, $6.50
Grass

Nos.	1	2	3	4
Best	$1.50	1.75	2.00	
Common	$1.30	1.30	1.40	1.60

Potato and Manure
...*70%*
Whiffletrees
...*lb. 4¼c*
Hooks and Eyes:
Brass
...*60c&10c&10@70%*
Malleable Iron
...*70c&5@70c&10%*
Covert Saddlery Works' Self Locking Gate and Door Hook
...60%
Crown Picture
...50&10%
Bench Hooks—See *Bench Stops.*
Corn Hooks—See *Knives, Corn.*

Horse Nails—See *Nails, Horse*

Horseshoes—
See *Shoes, Horse.*

Hose, Rubber—
Garden Hose, ¾-inch:
Competition
...*ft. 4¼@ 4¼c*
3-ply Standard
...*ft. 5 @ 6 c*
4-ply Standard
...*ft. 8 @ 9 c*
3-ply extra
...*ft. 9 @10 c*
4-ply extra
...*ft. 11 @12 c*
Cotton Garden, ¾-in., coupled:
Low Grade
...*ft. 6 @7 c*
Fair quality
...*ft. 8 @9 c*

Irons—Sad—
From 4 to 10
...*lb 3@3¼c*
B. B. Sad Irons
...*lb. 3¼@4c*
Chinese Laundry
...*lb. 5@5 4c*
Chinese Sad
...*lb. 3½@3¼c*
Mrs. Potts', per set:

Nos.	50	55	60	65
	67@72c	68@69c	77@82c	74@79c

New England Pressing, lb.
...*3½@3¼c*

Soldering—
Soldering Coppers, 1 & 1½ lb., 21@ 23c.; 2 lb., 19@ 21c
Covert Mfg. Co
...20&2%
Smith & Hemenway Co's Sets
...70%

Pinking—
Pinking Irons
...*doz. 50@60c*

Jack Screws—See *Screws.*

Jacks, Wagon—
Covert Mfg. Co., Steel
...45&2%
Covert's Saddlery Works':
Daisy
...60&10%
Victor
...60&10%
Lockport
...40@40&10%
Lane's Steel
...33⅓&5%

Kettles—
Brass, Spun, Plain
...*20@25%*
Enameled and Cast Iron—See *Ware, Hollow.*

Knife Sharpeners—
See *Sharpeners, Knife.*

Knives—
Butcher, Shoe, &c.—
Foster Bros.' Butcher, &c
...80%
Hartzell Cutlery Co
...80&5%
Smith & Hemenway Co
...40&10%
Hay and Straw—See *Hay Knives.*

Corn—
Ft. Madison Cut-Easy, ₱ doz.
...$3.25
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—
Standard List
...*70&5@70c&10%*
Adjustable Handle
...25%
Bradley's
...35%
Cantelo's Folding
...50@50&5%
C. E. Jennings & Co. Nos. 45, 46
...40&10%
Jennings & Griffin
...66⅔&5%
Swan's
...70&10&2½%
Watrous
...25%
L. & I. J. White
...20&5@25%

Hay and Straw—
Lightning Pat n...per doz $5.25@5.50
Iwan's Sickle Edge
...₱ doz. $10.00
Iwan's Serrated
...₱ doz., $11.00
Lightning, (Genuine)
...$6.25@6.50
Maine
...₱ doz. $8.50

Mincing—
Buffalo
...₱ gro. $15.00

Miscellaneous—
Farriers'
...*doz. $2.00@3.00*
Woodenholm's
...₱ doz. $3.00@3.25

Knobs—
Base, 2¼-inch, Birch, or Maple. Rubber tip, gro
...*$1.20@1.25*
Carriage, Jap. all sizes
...*gro. 30@33c*
Door, Mineral
...*doz. 60@65c*
Door, Por. Jap'd
...*doz. 65@70c*
Door, Por. Nickel
...*doz. $2.00@2.10*
Bardsley's Wood Door, Shutter, &c
...15%
Picture, Sargent's
...60&10%

Ladders, Step—
Handy Ladder Works:

Extended Length. Feet.	Shipped Ready for Use Feet.	Per doz.	Shipped K. D., Per doz.
4	7	$16.00	$14.00
5	9	19.50	17.00
6	11	24.50	21.00
7	13	29.50	25.00
8	15	34.00	29.00
9	17	39.00	32.00
10	19	43.00	35.00
11	21	46.50	40.00
12	23	51.00	45.00

Ladies— Melting—
L. & S. Mfg. Co. 25%
P., S. & W. 5%
Reading 6%
Sargent's ..... 40@40&10%

Lanterns— Tubular—
Regular Tubular ..... doz. $4.35@4.75
Side Lift Tubular ..... doz. $4.75@5.25
Square Lift Tubular ..doz. $4.75@5.25
Other Styles ..... 40&10@40&10&5%

Bull's Eye Police—
No. 1, 2¾ inch $3.60
No. 2, 3 inch $4.00

Latches, Thumb—
Roggin's Latches ..... doz. $0@33c

Lawn Mowers—
See *Mowers, Lawn.*

Leaders. Cattle—
Small ..... doz. 50c; *large*, 55c
Covert Mfg. Co. ..... 45&2%

Lemon Squeezers—
See *Squeezers, Lemon.*

Lifters, Transom—
Solid Grip, Payson Mfg. Co. 30%
R. & E. 45%

Lines—

Wire Clothes, Nos...	18	19	20
100 feet	$1.20	1.00	1.65
75 feet	$1.80	1.70	1.30

Ossawan Mills.
Crown Solid Braided Chalk 33⅓%
Mason's, No. 0 to No. 3 ..... 33⅓%
Samson Cordage Works:
Solid Braided Chalk, No. 0 to 3 ..... 40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gr. 30%

Locks— Cabinet—
Cabinet Locks ..... 33⅓@33⅓&7⅓%

Door Locks, Latches, &c.—
[Net prices are very often made on these goods.]
Reading Hardware Co. 50%
R. & E. Mfg. Co. 50%
Sargent & Co. ..... 40@40&10%

Elevator—
Stowell's 40%

Padlocks—
Wrought Iron ..... 75&10@80%
R. & E. Mfg. Co. Wrt. Steel and Brass. 50%

Sash, &c.—
Fitch's:
Bronze and Brass 66⅔%
Iron 70%
Ives' Patent.:
Bronze and Brass 62½%
Iron 65%
Wrought Bronze and Brass ..... 55&5%
Wrought Steel 60%
Payson's Signal 80%
Reading ..... 60&10&10@70%

Machines— Boring—
Without Augers.

	Upright.	Angular.
Improved No. 3...	$4.25	No. 1 $5.00
Improved No. 4...	3.75	No. 2 3.38
Improved No. 5...	2.75	
Jennings'...	2.50	3.00
Millers' Falls...	....	5.75
Snell's, Rice's Pat.	2.50	2.75
Swan's, No. 500..	5.10	No. 200 6.45

Hoisting—
Moore's Anti-Friction Differential Pulley Block 30%
Moore's Hand Hoist, with Lock Brake. 30%
Moore's Portable Pneumatic Hoist.... 30%

Ice Cutting—
Chandler's 15%

Washing—
Wayne American ..... ₱ doz. $28.00
Western Star, No. 2 ..... ₱ doz. 28.00
Western Star, No. 3 ..... ₱ doz 30.00
St. Louis, No. 41 ..... ₱ doz. 60.00

Mallets—
Hickory ..... 45&5@50%
Lignumvitæ ..... 45c&5@50%
Tinners', Hickory and Applewood, doz. ..... 50@55c

Mats— Door—
Elastic Steel (W. G. Co.) 10%

Mattocks—
See *Picks and Mattocks.*

Meat Cutters—
See *Cutters, Meat.*

Milk Cans—See *Cans, Milk*

Mills— Coffee—
Enterprise Mfg. Co. ..... 25@30%
National, list Jan. 1, '94 ..... 30%
Parker's Columbia and Victor ..... 50&10@60%
Parker's Box and Side ..... 50&10@80%
Swift, Lane Bros. 30%

Mincing Knives—
See *Knives, Mincing.*

Molasses Gates—
See *Gates, Molasses.*

Money Drawers—
See *Drawers, Money.*

Mowers, Lawn—
Net prices are generally quoted.
Cheap ..... *all sizes, $1.80@2.10*
Good ..... *all sizes, $2.50@2.75*

	10	12	14	16-inch
High Grade	4.25	4.50	4.75	5.00

Continental ..... 60&10&5%
Great American ..... 70&5%
Great American Ball Bearing... 60&10&5%
Quaker City ..... 70&5%
Pennsylvania ..... 60&10&5%
Pennsylvania Golf 50%
Pennsylvania Horse 40%
Pennsylvania Pony 45%
Philadelphia:
Styles M., S., C., K., T. ..... 70&5%
Style A, all Steel ..... 60&10%
Style F, Low Wheel ..... 60&10%
Style E, High Wheel ..... 70&10&5%
Drexel and Gold Coin, low list... 50&5%

Nails—
Cut and Wire. See Trade Report. Wire Nails and Brads, Papered. List July 10, 1899 ..... 85&10%
Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—

Nos.	6	7	8	9	10	
A. C.	25c	23c	22c	21c	21c	40&5%
Ausable	25c	24c	23c	24c	23c	50&10%
Capewell	19c	18c	17c	16c	16c	10&5%
C. B. K.	25c	25c	22c	21c	21c	40%
Champ'n	28c	26c	25c	24c	23c	40&10&5%
Clinto	19c	17c	16c	15c	14c	30&10&5%
Maud S.	25c	23c	22c	21c	21c	50%
Neponset	23c	21c	20c	19c	18c	40%
Putnam	23c	21c	20c	19c	18c	33⅓%
Vulcan	23c	21c	20c	19c	18c	25&10%

American, Nos. 5 to 16 ₱ lb. ..... 9c@9½c
Jobbers' special brands... per lb. 8@9c

Picture

	1½	2	2½	3	3½ in.
Brass Head	.45	.60	.70	.95	1.00 gro.
Iron Head	..	1.10	1.10	1.10	.. gro.

Nippers, See *Pliers and Nippers.*

Nut Crackers—
See *Crackers, Nut.*

Nuts—

Cold Punched	*Off*
Mfrs. or U. S. Standard.	*list.*
Hexagon, plain	$5.50
Square, plain	$5.10
Square, C. T. & R.	$5.50
Hexagon, C. T. & R.	$6.00
Hot Pressed:	
Mfrs., U. S. or Nar. Gauge Stan'd.	
Square Blank	$5.30
Hexagon Blank	$6.00
Square Tapped	$5.20
Hexagon Tapped	$5.90

Oakum—
Best or Government ..... lb. 6¼c
Navy ..... lb. 5 c
U. S. Navy ..... lb. 5¾c
Plumbers' Spun Oakum 2¾c
In carload lots ¼c lb. off f.o.b. New York.

Oil Axle—
Snow Flake: 33⅓&10%

1 pt. cans, per doz.	$3.00
1 qt. cans, per doz.	4.80
1 gal. cans, per doz.	15 00
5 gal. cans, per doz.	66.00

Oil Tanks—See *Tanks, Oil.*

Oilers—
Brass and Copper ..... 50@50&5%
Tin or Steel ..... 60c&10@65%
Zinc ..... 60c&10@65%
Paragon:
Brass and Copper ..... 40c&10%
Tin or Steel ..... 60c&10%
Zinc ..... 60c&10%
Malleable, Hammers' Improved, No. 1 $3.60; No. 2, $4; No. 3, $4.40 ₱ doz. 20%
Malleable, Hammers' Old Pattern, same list ..... 50&10%
Wilmot & Hobbs Mfg. Co:
Spring Bottom Cans ..... 70@70&10%
Railroad Oilers etc, ... 60@60&10%

Openers—
Can—
French ..... doz. 35c
Iron Handle ..... doz. 25@27c
Sprague, Iron Hdle...per doz 35@40c
Sardine Scissors...doz. $1.75@3.00
Tip Top ..... per doz. $0.75
National, ₱ gro. ..... $1.75@2.00
Stowell's ..... per doz. 35@45c
Waldorf, ₱ gro. $8.85

Egg—
Nickel Plate ..... per doz., $2.25
Silver Plate ..... per doz., $3.50

Packing—
Asbestos Packing, Wick and Rope, 16½@18c lb.

Rubber—
Sheet, C, I. ..... 8@12½
Sheet, C. O. S. ..... 9@13½
Sheet, C. B. S. ..... 10@14½
Sheet, Pure Gum ..... 50@70%
Sheet, Red ..... 35@40%
Jenkins' Standard, ₱ lb 80c... 25@25&5%

Miscellaneous—
American Packing ..... 7@10c lb.
Cotton Packing ..... 15@11c lb.
Italian Packing ..... 9@12½c lb.
Jute ..... 3½@4c lb.
Russia Packing ..... 7@11c lb.

Pails— Creamery
S. S. & Co., with gauges.. No 1 $6.50; No. 2, $5.75 ₱ doz.

Galvanized—
Price per gro.

Quart	10	12	14
Water, Regular	18.00	$1.00	$4.00
Water, Heavy	$4.00	27.00	30.00
Fire, Rd. Bottom	21.00	33.00	35.00
Well	27.00	29.00	31.00

Pans— Dripping—
Standard List ..... 60@60&5%

Fry—

Common Lipped:					
No.	1	2	3	4	5
Per doz.	$0.60	.75	.85	.95	1.15

Roasting and Baking—
Regal, S. S. & Co., ₱ doz., Nos. 5, $4.50; 10 $5.00; 20 $5.50; 30, $6.00
Simplex, ₱ gro., No. 40 $30.00; 50, $34.50; 60 $39 00; 140, $33.00; 150, $37.50; 160, $43.00.

Paper—
Building Paper—

Asbestos:	*lb.*
Building Felt	3c
Mill Board, sheet, 40 x 40 inches	4c
Mill Board, roll, thicker than 1-16 inch	3c
Mill Board, roll, 1-16 in. thick and less	3c

	Per roll
Rosin Sized Sheathing:	*500 sq. ft.*
Light wt., 20 lbs. to roll	$0.32
Medium wt., 30 lbs. to roll	$0.47
Heavy wt., 40 lbs. to roll	$0.58
Medium Grades Water Proof Sheathing	$0.65@1.25
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton	$36.00@37.00
Red Rope Roofing, 250 sq. feet per roll	$1.65

Tarred Paper.
1 ply (roll 500 sq.ft.), ton...$26 00@27.00
2 ply, roll 108 sq. ft. ..... 45@50c
3 ply, roll 108 sq. ft. ..... 60@70c
Slater's Felt (roll 500 sq. ft.)..50@60c
R. R. M. Stone Surfaced roofing (roll 110 sq. ft.) $2.75

Sand and Emery—
List Dec. 23, 1899..50c&10@50c&10c&10%

Parers— Apple—

Advance	₱ doz. $4.50
Baldwin	₱ doz. $5.00
Bonanza	each $5.00
Dandy	each $7.50
Eureka, 1898	each $16.00
Family Bay State	₱ doz. $12.00
Hudson's Little Star	₱ doz. $4.00
Hudson's Rocking Table	₱ doz $5.50
Improved Bay State	₱ doz. $27.00@30.00
New Lightning	₱ doz. $5.50
Reading 72	₱ doz. $4.00
Reading 78	₱ doz. $7.00
Turn Table '98	₱ doz. $5.50
White Mountain	₱ doz. $4.00

Potato—

Saratoga	₱ doz. $5.50
White Mountain	₱ doz. $4.50

Picks and Mattocks—
List Feb. 23, 1899....70c&10@70c&10c&5%

Pigeons— Clay
Markle's Black Birds, f.o.b. factory, per M $3.75
See also *Traps, Target.*

Pinking Irons—
See *Irons, Pinking.*

Pins— Escutcheon—
Brass 60%
Iron, list Nov. 11, '85 ..... 60%

Pipe, Cast Iron Soil—
Factory Shipments—Carload lots.
Standard, 2-6 in. ..... 65c&5%
Extra Heavy, 2-6 in. ..... 70c&10%
Fittings ..... 75c&10c&5%
NOTE.—*Freight allowed on Carload lots.*

Pipe, Merchant, Boiler Tubes, &c.—
Less than Carloads to Consumers.

Merchant Pipe.	*Black.*	*Galvanized*
⅛ to ½ inch	61%	48%
¾ to 10 inch	63½%	50%
Boiler Tubes	*Up to*	
Steel.	*22 feet*	
1 to 1¾ inch and 2¾ to 5 inch inclusive		65½%
2 to 2½ inch, inclusive		60%
6 to 10 inches		50%
Iron.		
1 to 1½ inch and 2½ in.		45½%
1¾ to 2¼ inch		45%
2¾ to 12 inch		53%
Casing, Cut Lengths.	*S. & S.*	
2 to 8 inch		53½%
8¼ to 12 inch		59%
4¼ to 12½ inch		61½%

NOTE.—*Prices are largely nominal owing to scarcity of Pipe. Jobbers are obtaining almost any price they ask.*

Pipe, Sewer—
Standard Pipe and Fittings, 8 to 24 in.
New England 70%
New York and New Jersey 75%
Ohio and Michigan 80%
Carload lots are generally delivered.

Planes and Plane Irons—
Wood Planes—
Molding ..... 40c&2½@40c&10%
Bench, First quality ..... 45c&10@45c&10c&5%
Bench, Second quality ..... 60c&10@50c&10c&5%
Bailey's (Stanley R. & L. Co) ..... 50&10@50&10&10%
Gage Self Setting 35%

Iron Planes—
Bailey's (Stanley R. & L. Co) ..... 50&10@50&10&10%
Chaplin's Iron Planes ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 25&10@25&10&10%
Sargent's ..... 50&10&10%

Plane Irons—
Wood Bench Plane Irons ..... 30c&5@30c&10c&5%
Buck Bros. 30%
Stanley R. & L. Co... 50&10@50&10&10%
L. & I. J. White ..... 20&5@25%

Planters, Corn, Hand.
Kohler's Eclipse ..... ₱ doz. $9.00

Plates—
Felloe ..... lb. 3¾@4c
Self-Sealing Pie Plates (S. S. & Co.), ₱ doz. $2.00 ..... 50%

Pliers and Nippers—
Button Pliers ..... 70c&10@75%
Gas Burner, per doz., 5 in., $1.15@ $1.20; 6 in., $1.35@$1.45
Gas Pipe.. 7 8 10 12-in. $1.75 $2.00 $2.75 $3.75
Acme Nippers ..... 50@50&5%
Bernard's:
Parallel Pliers, &c 25%
Paragon Pliers ..... 50&5%
Lodi Pliers ..... 50&5%
Elm City Fence Pliers 35%
Cronk Hanger Co.:
American Button ..... 75&10%
Cronk's 60%
Improved Button ..... 70&10%
Stull's Pattern 50%
Combination and others 25%
Haller's Farriers' Nippers, Pincers, and Tools 50@50&5%
P., S. & W. Tinners' Cutting Nippers. 30@30&10%
Swedish Side, End and Diagonal Cutting Pliers 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40%

Plumbs and Levels—
Plumbs and Levels ..... 75@75c&10%
Davis Iron, Machinist Nos. 1 to 14 ..... 20%
Davis Iron, adjustable Nos. 6 to 49 ..... 35%
Disston's 70%
Pocket Levels ..... 75&10&10@75&10%
Stanley R. & L. Co ..... 70&10@70&10&10%
Stanley's Duplex ..... 25&10@25&10&10%
Woods' Extension 33⅓%

Poachers, Egg—
Buffalo Steam Egg Poachers, ₱ doz., No. 1, $7.20; No. 2, $11.00 No. 3, $11.00; No. 4, $14.50 ..... 50%

Points, Claziers'—
Bulk and 1 lb. papers.. lb. 10½c@...
½-lb. papers ..... *lb.* 11c @...
¼-lb. papers ..... *lb.* 11½c@...

Pokes, Animal—
Ft. Madison Hawkeye ..... ₱ doz. $3.25
Ft. Madison, Western ..... ₱ doz. $3.75

Police Goods—
Manufacturers' Lists ..... 25@25&5%
Tower's 25%

Polish—Metal—
Prestoline Liquid, No. 1 (½ pt.), ₱ doz. $3.00; No. 2 (1 qt.), $9.72 ..... 40%
Prestoline Paste ..... 40&10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50c; ₱ gr. $4.50; ½ lb boxes, ₱ doz. $1.25; 1 lb boxes, ₱ doz. $2.25.
U. S. Liquid, 3 oz. cans, ₱ doz. $1.25; ₱ gr. $12.00.
Barkeepers' Friend Metal Polish, ₱ doz. $1.75; ₱ gr. $18.00.
Wynn's White Silk, ¼ pt. cans, ₱ doz. $2.00

Stove—
Black Eagle Benzine Paste, 5 lb cans ... ₱ lb 10¢
Black Eagle, Liquid, ¼ pt. cans, ₱ doz. 75¢
Black Jack Paste, ¼ lb cans, ₱ gro. $9.00
Ladd's Black Beauty, gr. $10.00 ..... 50%
Joseph Dixon's, ₱ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ₱ lb 8¢
Fireside ..... ₱ gr. $2.50
Gem, ₱ gr. $4.50 ..... 10%
Japanese ..... ₱ gr. $3.50
Jet Black ..... ₱ gr. $3.50
Peerless Iron Enamel, ¼ pt. cans ..... ₱ doz. $1.50
Wynn's:
Black Silk, 5 lb pail ..... each 70¢
Black Silk, ½ lb box ..... ₱ doz. $1.00
Black Silk, 5 oz. box ..... ₱ doz. $0.75
Black Silk, ½ pt. liq ..... ₱ doz. $1.00

Poppers, Corn—
Round or Square:
1 qt ..... *gro. $7.00@$7.50*
1½ qt ..... *gro. 9 50@ 10.00*
2 qt ..... *gro. 10.50@ 11.00*

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Potato Parers—
See *Parers, Potato.*

Pots— Glue—
Enameled 45%
Tinned 40%

Powder—
In Canisters:
Duck, 1 lb. each 45c
Fine Sporting, 1 lb. each 75c
Rifle, ½-lb. each 15c
Rifle, 1-lb. each 25c
In Kegs:
Duck, 6½-lb. kegs $2.25
Duck, 12½-lb. kegs $4.25
Duck, 25-lb kegs $8.00
Rifle, 6¼-lb kegs $1.25
Rifle, 12½-lb. kegs $2.25
Rifle, 25-lb. kegs $4.00
King's Semi-Smokeless:
Keg (25 lb bulk) $6 50
Half Keg (12½ lb bulk) $3.50
Quarter Keg (6¼ lb bulk) $1.90
Case 24 (1 lb cans bulk) $8.50
Half case (1 lb cans bulk) $4 50

King's Smokeless:	Shot Gun	Rifle
Keg (25 lb bulk)	$12 00	$15.00
Half Keg (12½ lb bulk)	6.25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)	14.00	17.00
Half case 12 (1 lb cans blk)	7.25	8 75

Presses—
Fruit and Jelly—
Enterprise Mfg. Co. ..... 30@35%

Pruning Hooks and Shears—See *Shears.*

Pullers, Nail—
Cyclops ..... 40@40&10%
Diamond B. No. 2, case lots, ₱ doz. $6.00
Diamond B, No. 3, case lots, ₱ doz. $5.50
Giant, No. 1, ₱ doz. $18; No. 2, $16.50; No. 3, $15 ..... 40%
Miller's Falls, No. 3, per doz. $12.00 ..... 15&10%
Pelican ₱ doz. $9.00 ..... 40&10%
Scranton, Case Lots:
No. 1 (large), ₱ doz. ₱ gr. No. 2 (large), $5.75; No 3 (small), $5 ₱ gr.; No. 2-B (large), $5.50; No. 3-B (small), $5.00; No. 2-D (large), $4.50; No 3-D (small) $4 00.

Pulleys—Single Wheel—

Inch	2	2½	3
Awning ..doz.	$0.45	.70	.95
Inch	2	2¼	2½
Hay Fork, Swivel or Solid Eye		*doz.*	*$1.35@1.50*
Hot House, doz	$0.65	.90	1.20
Inch	1¼	1½	1¾ 2
Screw	*doz. $0.15*	.20	.25 .30
Inch	1¾	2	2¼ 2½
Side	*doz. $0.30*	.40	.55 .60
Inch	1½	1¾	2 2¼
Tackle	*doz. $0.30*	.45	.65 1.10

Stowell's:
Ceiling or End, Anti-Friction 60%
Dumb Waiter, Anti-Friction.. 60&10%
Hay Fork, Anti-Fricton, 5-in. Wheel, ₱ doz. $12.00 ..... 50%
Electric Light 60%
Side, Anti-Friction ..... 60&10%

Sash Pulleys—
Common Frame: Square or Round End per doz., 1¾ in., 12c.; 2 in., 18c
Auger Mortise, no Face Plate, per doz. 1¾ in., 12c.; 2 in., 15c.
Auger Mortise, with Face Plate, per doz., 1¾ in., 13c.; 2 in., 15½c.

Acme.....1¾(in., 16¢; 2 in., 19¢
Common Sense, 1¾ in.... ₱ doz., 18¢; 2 in., 20¢.
Fox All-Steel, Nos. 3 and 7, 2¼ in..... ₱ doz. 25¢
No. 9, 1¾ in..... ₱ doz. 20¢
Extra for Plated Finish.... ₱ doz. 20¢
Extra for Anti-Friction Bronze Bushing..... ₱ doz 10¢
Grand Rapids All Steel Noiseless....40%
Ideal No. 13.....1¾ in.. ₱ doz., 16¢
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy....1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern.....60@ ....%
Pitcher Spout.....75@ ....%
Wood.....50@50&10%
Pump Leathers, Lower and Plunger Valves—Per gro.:

Inch..	2	2¼	2½	2¾
	$2.20	$2.50	2.75	3.00
Inch..	3	3¼	3½	3¾	4
	$3.30	3.60	3.85	4.10	4.50

Barnes Dbl. Acting (low list).....50%
Flint & Walling's Fast Mail (low list)..50%
Flint & Walling's Pitcher Spout.....75%
Loud's Suction Pumps, U. S. Co.....20%
Myer's Pumps, low list 50%
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co.....30%

Punches—

Revolving (4 tubes)...doz. $3.75@4.25
Saddlers' or Drive, good..doz. 65@70c
Spring, single tube, good quality... $1.65@1.75
Bemis & Call Co.'s Cast Steel Drive....50%
Bemis & Call Co.'s Check.....55%
Bemis & Call Co.'s Spring.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Steel Screw, B & K. Mfg. Co.....40%
Tinners' Hollow, P., S. & W. Co..... 35@35&5%
Tinners' Solid, P., S. & W.Co., ₱ doz., $1.44.....60%

Rail— Barn Door, &c.—

Cast Iron, Barn Door: Flange Screw Holes for Rd. Groove Wheels:

⅛	⅝	¾ In
$1.70	$2.10	$3.00 100 feet.

Angular for Sq. Groove Wheels:

Small.	Med.	Large.
$1.60	1.95	2.70 100 feet.

Sliding Door, Brnzed Wr't Iron, ft. 6¾c
Sliding Door, Iron Painted....2½@3c
Sliding Door, Wrought Brass, 1¼ in.....lb. 36c..50%
Cronk's Double Braced Steel Rail, ₱ foot..... 3¼¢
Cronk's O. N. T. Rail..... 8½¢
Lanes' O. N. T., ₱ 100 ft., 1 inch....$2.75
Lanes' Standard, ₱ 100 ft.....3.75
Lawrence Bros.' ..... ₱ ft. 4¼¢
McKinney's None Better..... ₱ ft. 3½¢
McKinney's Standard..... ₱ ft. 4 ¢
Stowell's Cast Rail..... 1½¢
Stowell's Steel Rail, Plain..... 2½
Stowell's Wrought Bracket, Plain....3¼¢

Rakes—

Net Prices, Malleable Rakes:

	10	12	14	16-tooth
Shank	$1.50	1.60	1.75	1.85
Socket	$1.65	1.80	1.95	2.10

Sept. 1, 1900, List:
Cast Steel.....70¢&c&2%
Malleable.....70¢10@75&5%
Lawn Rakes, Metal Head, per doz., 20 teeth.....$3.25@3.50
24 teeth.....$3.60@3.75
Fort Madison Red Head Lawn.....$3 25
Fort Madison Blue Head Lawn.....$3.00
Jackson Lawn, 29 and 30 teeth..... ₱ doz. $4.00
Kohler's:
Lawn Queen, 20-tooth, ₱ doz.....$3.60
Lawn Queen, 24-tooth, ₱ doz.....$3.75
Paragon, 20-tooth, ₱ doz.....$2.85
Paragon, 24-tooth, ₱ doz.....$3.00
Steel Garden, 14-tooth, ₱ doz.....$3.00
Malleable Garden, 14-tooth ₱ doz. $2.25

Rasps, Horse—

Disston's.....75%
Heller Bros.....70&5%
McCaffrey File Co. Horse Rasps.60&10&5%
New Nicholson Horse Rasp.....70&10%
See also *Files.*

Razors—

Boracic.....70%
Fox Razors, No. 42... ₱ doz. $20.00 } 40%
Fox Razors, No. 44... ₱ doz. $24.00 } dis.
Fox Razors, No. 62, Platina, ₱ doz $24.00
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 00.....$12.00
All other Razors.....40%
Safety Razors.....40%

Razor Strops—

See *Strops, Razor.*

Reels— Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Populo and Salmon, Single Action, Multiplying and Quadruple, all sizes.....25%
Hendryx Single Action Series, 102P and PN, 902P and PN, 102 PR and PRN, 902 PR and PRN, 804 P and PN, 00204P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor.50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N, 2904P and PN, 00290&PN, 0924 and 0924N, 5009N and PN.....40&10%
Shakespeare, Style C.....25%

Registers—

List Sept. 2, 1901.

Black Jap.....
White Jap.....
Bronzed.....
Nickel Plated.....
Electro Plated..... } 70@70&5%

There is a good deal of irregularity in prices of Registers, especially in Black Japanned, and some jobbers and manufacturers are using the old list.

Revolvers—

Single Action.....80@85c
Double Action.....$1.20
Automatic.....$2.75
Hammerless.....$3.45

Riddles, Grain or Sand—

16 in. per doz.....$2.00@$2.25
17 in. per doz.....$2.25@$2.50
18 in. per doz.....$2.50@$2 75

Rings and Ringers—

Bull Rings—

	2	2½	3 Inch.
Steel	$0 80	0.90	0.95 doz.
Copper	1.10	1.20	1.50 doz.

Hog Rings and Ringers—

Hill's Rings....gro. boxes, $4.50@4.75
Hill's Ringers, Gray Iron, doz. 55@60c
Hill's Ringers, Mal. Iron, doz. 75@80c
Blair's Rings.....per gro. $5.75@6.00
Blair's Ringers...per doz. $0.65@ .70
Brown's Rings....per gro. $6.00@6.25
Brown's Ringers..per doz. $1.00@1.10
Rapid Rings.....₱ gro. $6.00
Rapid Ringers.....₱ doz. $3.50

Rivets and Burrs—

Copper.....50@50&5%
Iron or Steel:
Tinners'.....70@70&10%
Miscellaneous.....70@70&10%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rollers—

Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....50&10&10%
Cronk's Stay.....66⅔%
Cronk's Brinkerhoff.....66⅔%
Lane's, Stay.....33⅓%
Stowell's Barn Door Stay... ₱ doz. $1.25

Rope—

Manila, 7-16 in. and larger lb. 10¼@10½¢
Manila.....⅜-inch.....lb. 10¾@11¼¢
Manila ¼ & 5-16 in.....lb. 11¼@11¾¢
Manila, Tarred Rope, 15 thread.....lb. 10¼@10½¢
Manila Hay Rope. Medium.....lb. 10¼@10½¢
Sisal, 7-16 in. and larger lb. 8¼@ 8½¢
Sisal.....⅜-inch..lb. 8½@ 9 ¢
Sisal, ¼ and 5-16 in....lb. 9 @ 9½¢
Sisal, Hay Rope, 2 to 10 ply.....lb. 8¼@ 8½¢
Sisal, Tarred, Medium Lath Yarn.....lb. 7¾@ 8¼¢
Cotton Rope:
Best.....¼-in. and larger lb. 13½¢
Medium..¼-in. and larger lb. 11 c
Com.....¼-in. and larger lb. 9 c
Jute Rope:
Thread No. 1, ¼ in. and up lb. 6½¢
Thread No. 2, ¼-in. and up lb. 6 c
Yarn, ¼ in and up..... lb. 5½¢

Wire Rope—

Galvanized.....35¢&7½%
Plain.....30¢&7½%

Ropes, Hammock—

Covert Mfg. Co.....45&2%
Covert Saddlery Works.....50&5%

Rules—

Boxwood..75¢10¢10¢10¢10@75¢10 ¢10¢10¢10&5%
Ivory....35¢10¢10@40¢10¢10¢10¢10%
Chapin-Stephens Co.:
Boxwood.....75&10&10@75&10&10&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber .....50&10%
Stanley R. & L. Co.:
Boxwood...75&10&10@75&10&10&10%
Ivory.....35&10@35&10&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—

See *Paper and Cloth.*

Sash Cords—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—

See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers Sausage.*

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins:
Circular.....50@50&10%
Band .....50&10&60%
Cross Cuts .....35&5%
Mulay, Mill and Drag .....50&10%
One-Man Saw.....40%
Wood Saws 40%
Hand, Compass, &c.....40%
Disston's:
Circular Solid and Inserted Tooth.50%
Band 2 to 14 in. wide.....60%
Band ¼ to 1¾.....70%
Crosscuts.....45@45&10%
Narrow Crosscuts.....50@50&10%
Mulay, Mill and Drag.....50%
Framed Woodsaws.....35@35&7½%
Woodsaw Blades.....40@40&7½%
Woodsaw Rods.....25%
Hand Saws, Nos. 12, 99, 9, 10, d100, D8, 120, 79, 77, 8.....25@25&7½%
Hand Saws, Nos 7, 107, 107½, 3, 1, 0, 00, Combination.....30@30&7½%
Compass, Keyhole, &c.....35@25&7½%
Butcher Saws and Blades..35@35&7½%
C. E. Jennings & Co.'s:
Back Saws.....25%
Butcher Saws.....35%
Compass and Key Hole Saws.....25%
Framed Wood Saws.....40%
Hand Saws.....25@30%
Wood Saw Blades.....45%
Peace:
Circular and Mill 50%
Cross Cuts, list Jan. 1, '99.....50%
Hand, Panel and Rip.....30%
Richardson:
Circular and Mill 50%
Hand, &c.....30%
X Cuts, list Jan. 1, '99.....50%
Simonds':
Circular Saws.....50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts.....40&10%
Gang Mill, Mulay and Drag Saws..50%
Band Saws.....50%
Back Saws.....25@25&7½%
Butcher Saws.....35@35&7½%
Hand Saws.....25@25&7½%
Compass, Keyhole, &c .....25@25&7½%
Wood Saws .....35@35&7½%

Hack Saws—

Disston:
Concave Blades.....25%
Keystone.....30%
Hack Saw Frames.....30%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180, 330.....40%
Hack Saws, Nos. 175, 180, 330, complete.....40%
Griffin's Hack Saw Frames 45%
Griffin's Hack Saw Blades.....45%
Star Hack Saws and Blades.....15&10%

Scroll—

Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18: with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete, $4.00.....15&10%

Scale Beams—

See *Beams, Scale.*

Scales—

Family, Turnbull's.....30@30&10%
Counter:
Hatch. Platform, ½ oz to 4 lbs. doz $5.50
Two Platforms, ½ oz to 8 lbs. ..... doz. $16 00
Union Platform, Plain...$1.70@1.90
Union Platform, Striped $1.85@2.15
Chatillon's:
Eureka.....25%
Favorite.....40%
Grocers' Trip Scales.....50%
Pelouze Scales—Household, Counter, Confectionery, Postal, Ice, &c.....50%
"The Standard" Portables.....45%
"The Standard" R. R. and Wagon....50%

Scrapers—

Box, 1 Handle.....doz $2.25@2.50
Box, 2 Handle.....doz. $3.75@4.00
Ship, No. 1, doz. $3.50; No 2, $2.25@2.40
Adjustable Box Scraper (S. R. & L. Co.) $6.00.....30&10%

Screens, Window, and Frames—

Bonanza Window Screens.....60@60&5%
Flyer Pattern Window Screen.60@60&5%
Maine Window Screen Frames.40&10&5%
Perfection Window Screens.....60@60&5%
Phillips' Window Screen Frames..... 60&10&5%
Porter's Hummer Window Screens..... 60@60&5%
Porter's Klondike Window Screens ..... 60&2½@60&7½%
Wabash Spring Adj. Screen. .....50% See also *Doors.*

Screw Drivers—

See *Drivers, Screw.*

Screws—Bench and Hand—

Bench, Iron..doz. 1 in., $3.00@3.25; 1¼, $3.50@3.75; 1¼, $4.00@4.50
Bench, Wood, Beech..doz. $3.50@3.75
Hand, Wood.....30&5@40%
Hand, R. Bliss Mfg. Co.....35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Oct. 1, '99.....75¢15@..%
Coach and Lag, Gimlet Point, list Oct. 1, '99.....75¢10@...%
Hand Rail, list Jan. 1, '81.60¢10@...%

Jack Screws—

Standard List.....75@75¢10%
Millers Falls.....50&10&10%
Millers Falls, Roller .....50&10%
P., S. & W.....50&50&5%
Sargent.....70&10%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron.50@50¢10%
Flat or Round Head, Brass..... 50@50¢10%

Set and Cap—

Set (Iron or Steel) .....70¢10%
Sq. Hd. Cap.....65¢10%
Hex. Hd. Cap.....65¢10%

Wood—

List Jan. 1, 1900.
Manufacturers' printed discounts:
Flat Head, Iron.....87½@90%
Round Head, Iron.....85@87½%
Flat Head, Brass .....85@87½%
Round Head, Brass.....82½@85%
Flat Head, Bronze.....75@80%
Round Head, Bronze.....75½@77½%
Drive Screws.....87½@90%
NOTE.—*Extra 5&10% often given.*

Scroll Saws—See *Saws, Scroll.*

Scythes—

Grass Scythes:
Natural Finish.....per doz. $7.25
Polished Blade.....per doz. $7.75
Painted or Bronzed..per doz. $7.50
Weed and Bush..per doz. $7.25@7.50

Scythe Snaths—

See *Snaths, Scythe.*

Seeders— Raisin—

Enterprise.....35@30%

Sets— Awl and Tool—

Brad Awl and Tool Sets:
Wood Hdle., 10 Awls doz. $2.00@2.25
Wood Hdle., 14 Awls, 6 Tools..... doz. $2.50@2.60
Atken's Sets, Awl and Tools:
No. 20, ₱ doz. $10.00.....50&10&10%
Fray's Adj. Tool H dls...Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior:
No. 1, $7.50; No. 2 $4.00; No. 3, $5.50.....30&10@30&10&10%

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe..... ₱ doz.....$9.00

Nail—

Square.....per gro. $2.50
Round, Blk. and Pol., assorted..... *gro. $1.80@2.50*
Octagon.....*gro. $4.25@4.75*
Knurled, Good.....*gro. $6.00@6.50*
Buck Brothers.....27½%
Cannon's Diamond Point, ₱ gr. $12..35%
Mayhew's.....per gro. $3.00
Snell's Corrugated, Cup Pt. per gro. $7.50
Snell's Knurled, Cup Pt....per gro $7.50

Rivet—

Regular list.....70@70¢10¢5%

Saw—

Atken's:
Genuine..... ₱ doz. $5.50@6.00
Imitation ..... ₱ doz. $3.00@3.10
Atkin's.:
Criterion.....40%
Adjustable.....40%
Bemis & Call Co's.:
Cross Cut.....30%
Hammer, new Pat.....45%
Plate.....20%
Spring Hammer.....50%
Disston's Star and Monarch.....25%
Morrill's No. 1, $15.00.....40&20%
Nos. 3 and 4, Cross Cut, $23...50&20&5%
No. 5, Mill, $31.00.....50&30&10%
No. 10, $15.50.....40&20%
No. 11, $16.00.....40&20%
Taintor Positive, ₱ doz. $18.....50%

Sharpeners Knife—

Chicago Wheel & Mfg. Co.....65%
Smith & Hemenway Co.....70&5%
Tanite Mills ₱ gross, $14.40...35@33⅓%

Sharpeners Skate—

Eureka Skate Sharpener..... ₱ doz. $2.00

Shaves, Spoke—

Iron.....doz. $1.00@1.95
Wood.....doz. $1.75@2.00
Bailey's (Stanley R. & L. Co.).....50&10%
Goodell's, ₱ doz. $9.00.....15&10%

Shears—

Cast Iron...	7	8	9 in.
Best	$16.00	18.00	20.00 gro.
Good	$13.00	15.00	17.00 gro.
Cheap	$5.00	6.00	7.00 gro.

Straight Trimmers, &c.:
Best quality, Jap.....70@70&10%
" Nickel.....60@60&10%
Fair qual. Jap.....60@30&5%
" Nickel.....75@75&10%
Tailors' Shears.....40@40&10%
Acme Cast Shears.....40@40&5%
Heinisch's Tailors' Shears.....40%
Wilkinson's Hedge.....50%
Wilkinson's Sheep.....1900 list. 50%

Tinners' Snips—

Steel Blades.....30¢10%
Steel Laid Blades .....40¢10%
Forged Handles, Steel Blades, Berlin..... 40@40&10%
Jennings & Griffin Mfg. Co's. 7 to 10 inch.....50%
Niagara Snips.....40%
P. S. & W. Co.....20%

Pruning Shears and Tools—

Cronk's Grape Shears.....33⅓%
Cronk's Pruning Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00...95@25&10%
Disston's Pruning Hook, ₱ doz. $12.00 25@25&10%
John T. Henry Mfg. Company Pruning Shears, all grades..40@40&5%
Orange Shears.....50&10&50&20%
Grape.....40&10@50%
Tree Pruners.....75%
Nagley's Pruning Shears.....10&5%
P., S. & W. Co.....33⅓%

Sheaves—Sliding Door—

Stowell's Anti-Friction.....50%
Patent Roller Hatfield's, Sargent's list, 75&10&10%
Reading.....70&10@75%
R. & E. list.....33⅓%
Wrightaville, Hatfield Pattern.....60%

Sliding Shutter—

Reading list.....70&10@75%
R. & E. list.....33⅓%
Sargent's list.....50&16⅔&10%

Shells— Shells, Empty—

Brass Shells, Empty:
First quality, all gauges.....60&5%
Climax, Club, Rival, 10 and 12 gauge, 65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Smokeless, 10, 12, 16 and 20 gauge, 33⅓&10%
Blue Rival, New Climax, Primrose Club, Yellow Rival, 10, 12, 16 and 20 gauge.....15%
Climax Club, League, Rival, 14, 10 and 20 gauge ($7.50 list)....20&5%
Climax Club, League, Rival 10 and 12 gauge.....25&5%
Defiance, High Base, New Victor, Nitro, Repeater, 10, 12 16 and 20 gauge.....15%
Trap and Metal Lined, 10, 12, 16 and 20 gauge.....33⅓&10&5%

Shells, Loaded—

Loaded with Black Powder.....40¢5%
Loaded with Smokeless Powder, medium grade.....40¢10&5%
Loaded with Smokeless Powder, high grade.....40¢10¢10¢5%

Shoes, Horse, Mule, &c.—

F. o. b., Pittsburg.
Iron.....per keg $3.50
Steel.....per keg 3.25
Burden's, all sizes, ₱ keg.....$3.00

Shot—

Drop, up to B, 25-lb. bag....$1.45@1.50
Drop, B and larger, per 25-lb. bag.. $1.70@1.75
Buck, 25-lb. bag.....$1.70@1.75
Chilled, 25 lb. bag.....$1.70@1.75
Dust Shot, 25-lb. bag.....$2.00
Markle's Chilled.....$1.75
Tatham's Chilled.....$1.75
NOTE.—*There is some irregularity in prices because jobbers often undersell the manufacturers.*

Shovels and Spades—

No. 2, Polished, Sq. or Rd. Point, D or L Handle:

	A1, 1st Grade.	*B2,* 2d Grade
Plain Back....	$10 50	$9 60
Strap Back....	9.90	9.00
Cleveland Pat'n	10.80	9.80

	C3, 3d Grade.	*D4,* 4th Grade
Plain Back....	$8.70	$8.10
Strap Back....	8.10	7.50
Cleveland Pat'n	8.40	7.80

All other sizes add 20c doz.
Black deduct 30c doz.
Note.—The above are the regular Association prices but are often shaded by

jobbers $0.50@1.00, and Common, Plain Black Shovels aregenerally sold by jobbers at about $6.75.

Sieves and Sifters—
Hunter's Imitation, gro. $11.00@11.50
Buffalo Metallic Blued, S. S. & Co., ₱ gr.:
14&16 16&18 18&20
$12.90 $13.80 $15.00
F. J. Meyers' Mfg. Co.:
Eclipse ₱ gr. $11.00
Electric Light ₱ gr. $11.00
Hunter's Genuine ₱ gr. $12.50
No Name, Hunter's ₱ gr. $11.00
Standard ₱ gr. $11.00
Shaker (Barler's Pat.) Flour Sifters. ₱ doz., $2.00 30%

Sieves, Tin Rim—
Per dozen.

Mesh	14	16	18	20
Black, full size	$0.95	.98	1.00	1.10
Plated, full size	.$1.05	1.08	1.10	1.20
Black, scant		$0.78	.80	.85

Sieves, Wooden Rim—
Nested, 10, 11 and 12 Inch.
Mesh 18, Nested, doz. $0.65@0.75
Mesh 20, Nested, doz. .75@ .85
Mesh 24, Nested, doz .90@1.00

Sinks—
Cast Iron—
Standard list 65@65&10%
NOTE.—There is not entire uniformity lists used by jobbers.
Wrought Steel—
New Era, Galv'd and Enameled 70&5%
New Era, Painted 60&10%
L. & G. Mfg. Co., Galvanized 50%
L. & G. Mfg Co., Enameled 50%

Skeins, Wagon—
Cast Iron 70&10@75%
Malleable Iron 40&10@50%
Steel 40@40&10%

Slates—
Factory Shipments.
"D" Slates 50&10&10&10%
Unexcelled, etc., Noiseless Slates .60 & 8 tens %
Victoria, etc., Noiseless Slates .60& 7 tens &5%
Wire Bound 50&10&5%
Web Hinge 50%

Slaw Cutters—See Cutters.

Slicers, Vegetable—
Sterling $2.00 33⅓

Snaps, Harness—
German 40@40&10%
Covert Mfg. Co.:
Derby 35&2%
High Grade 45&2%
Jockey 40&2%
Trojan 45&2%
Yankee 35&2%
Yankee, Roller 30&2%
Covert's Saddlery Works:
Crown 60%
German 60%
Model 60%
Triumph 60%
W. & E. T. Fitch Co.:
Bristol 40&10%
Empire 50&5%
German 40%
National 50&5%
Perfect 40%
Clipper 50&5%
Champion 40%
Security 40%
Victor 60&5%
Oneida Community:
Solid Steel 65@65&10%
Solid Swivel 65&10@65&10&10%
Sargent's Patent Guarded 66⅔&10%

Snaths—
Scythe 45&5&5%

Snips, Tinners'—See Shears.

Soldering Irons—
See Irons, Soldering.

Spoke Trimmers—
See Trimmers, Spoke.

Spoons and Forks—
Silver Plated—
Good Quality 50&10@60&10&5%
Cheap 60@60&10%
International Silver Co.:
1847 Rogers Bros. 40&10%
Rogers & Bro., William Rogers Eagle Brand, and Rogers & Hamilton 50&10%
Anchor, Rogers Brand 60%
Wm. Rogers & Son 60&10%
Simeon L. & Geo. H. Rogers Co.:
Silver Plated Flat Ware 60%
No. 77 Silver Plated Ware 60&10%
Miscellaneous—
German Silver 60&10@60&10&10%
Simeon L. & Geo H. Rogers Co.:
German or Nickel Silver, Special list 1. & 10%
Tinned Iron—
Teas per gro. 45@5.c
Tables per gro. 90c@$1.00

Springs—
Door—
Gem (Coil) 20%
Star (Coil) 30%
Torrey's Rod, 39 in. ₱ doz. $1.10@1.25
Victor (Coil) 50&10&10%
Carriage, Wagon, &c.
1¼ in. and Wider:
Black or ¼ Bright, lb. 5c
Bright, lb. 6½c
Painted Seat Springs:
1½ x3x 26 and smaller, per pr. 45@48c
1½ x 2 x 28 per pr. 52½@56c
1½ x 3 x 28 and narrower, per pr. 70@75c

Sprinklers, Lawn—
Enterprise 25@20%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 8, $24 30%

Squares—
Nickel plated } List Jan. 5, 1900
Steel and Iron } 70&10@75%
Rosewood Hdl Try Square and T-Bevels 60&10&10@70%
Iron Hdl. Try Squares and T-Bevels. 40&10@40&10&10%
Disston's Try Sq. and T-Bevels 60&10%
Winterbottom's Try and Miter 50&10%

Squeezers—
Lemon—
Wood, Common, gro., No. 0, $5.25 @5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap doz. $2.40@2.75
Good Grade doz. $3.00@3.50
Tinned Iron doz. $0.75@1.25
Iron, Porcelain Lined doz. $2.90@3.25
Jennings' Star ₱ doz. $1.85@1.90

Staples—
Barbed Blind lb. 7@7¼c
Electricians', Association list 80&10 &10&10%
Fence Staples, same price as Barbed Wire. See Trade Report.
Poultry Netting, Staples per lb. 3¼@3½c
Grand Crossing Tack Co.'s list 80&10%

Steels, Butchers'—
Dick's 30%
Foster Bros' 30%
Hartzell Cutlery Co 40&5%
C. & A. Hoffmann's 40%

Steelyards 25@25&10%

Stocks and Dies—
Blacksmiths' 40@40&10%
Gardner Die Stocks No. 1 50%
Gardner Die Stocks, larger sizes 40%
Green River 25%
Lightning Screw Plate 25%
Little Giant 25%
Reece's New Screw Plates 25&30%
Curtis Reversible Ratchet Die Stock 25%

Stone—
Scythe Stones—
Chicago Wheel & Mfg. Co:
Gem Corundum, 10 inch, $3.00 per gro., 12 inch, $10.80
Pike Mfg. Co. 1901 list:
Black Diamond S. S. ₱ gro. $12.00
Lamoille S. S. ₱ gro. $11.00
White Mountain S. S. ₱ gro. $9.00
Green Mountain S. S. ₱ gro. $6.00
Extra Indian Pond S. S. ₱ gro. $7.50
No. 1 Indian Pond S. S. ₱ gro. $7.00
No. 2 Indian Pond S. S. ₱ gro. $4.50
Leader Red End S. S. ₱ gro $4.50
Balance of 1901 list 33⅓& 33⅓%
Oil Stones, &c.
Chicago Wheel & Mfg. Co., 1901 list:
Gem Corundum Oil, Double Grit 50%
Gem Corundum Axe, Single or Double Grit 55%
Gem Corundum Slips 55%
Gem Corundum Razor Hones 33⅓
Pike Mfg. Co. 1901 list:

	₱ D
Arkansas Stone, No. 1, 3 to 5 in.	$2.80
Arkansas Stone, No. 1, 5½ to 8 in.	$3.50
Arkansas Slips No. 1	$4.00
Lily White Washita 4 to 8 i	60¢
Rosy Red Washita, 4 to 8 in	60¢
Washita Stone, Extra, 4 to 8 in.	50¢
Washita Stone, No. 1, 4 to 8 in.	40¢
Washita Stone, No. 2, 4 to 8 in.	30¢
Lily White Slips	90¢
Rosy Red Slips	90¢
Washita Slips, Extra	80¢
Washita Slips, No. 1	70¢
India Oil Stones (entire list)	25%
Hindostan No. 1, Regular	₱ D 8¢
Hindostan No. 18 small	₱ D 10¢
Axe Stones (all kinds)	33⅓%
Turkey Oil Stones, ex. 5 to 8 in.	₱ D 80¢
Queer Creek Stones, 4 to 8 in.	30¢
Queer Creek Slips	40¢
Sand Stone	5¢ 40%

Belgian, German and Swaty Razor Hones 40%
Natural Grit Carving Knife Hones, ₱ doz. $3.00
Quick Edge Pocket Knife Hones, ₱ doz. $3.00
Mounted Kitchen Sand Stone, ₱ doz. $1.50 33⅓&10%
Tanite Mills:
Emery Oil, ₱ doz. $5.00 50@60%

Stoners—
Cherry—
Enterprise 25@30%

Stops, Bench—
Millers Falls 15&10%
Morrill's ₱ doz., No. 1, $10.00 50&20%
Morrill's, No. 2, $11.00 50&10%

Stops, Window—
Ives' Patent 25&5%

Stove Boards—
See Boards, Stove.

Stove Polish—See Polish, Stove.

Strainers, Pump—
Diamond Joe Pump Strainers, per doz. 75¢

Straps, Box—
Cary's Universal, case lots 20&10%

Stretchers, Carpet—
Cast Iron, Steel Points doz. 55@65c
Socket doz. $1.75

Strops, Razor—
Smith & Hemenway Co 70%

Stuffers, Sausage—
Enterprise Mfg. Co. 25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97 30%

Tacks Brads, &c.—
List Jan. 15, '99.
Carpet Tacks, American 90&30@ %
American Cut Tacks 90&20@ %
Swedes Iron Tacks 90&30@ %
Swedes Upholsterers' Tacks 90&10@ %
Gimp Tacks 90&10@ %
Lace Tacks 90&10@ %
Trimmers' Tacks 90&20@ %
Looking Glass Tacks 70&10%
Bill Posters' and Railroad Tack 90&30@ %
Hungarian Nails 80&15%
Common and Patent Brads 80&10%
Trunk and Clout Nails 80&10%
NOTE.—The above prices are for Straight Weights.* An extra 5% is given Star Weights** and an extra 10&5% on Standard Weights.***

Miscellaneous—
Double Point Tacks 90&6 or 7 tens
Steel Wire Brads, R. & E. Mfg. Co.'s list 50&10@60%
See also Nails, Wire.

Tanks, Oil—
Emerald, S. S. & Co. 30-gal. $3.20
Emerald, S. S. & Co. 60-gal., $4.00
Queen City S. S. & Co., 50-gal. $3.50
Queen City S. S. & Co., 60-gal. $4.25

Tapes, Measuring—
American Asses' Skin 40¢10@50%
Patent Leather 25@30&5%
Steel 40@40&5%
Chesterman's 25@25&5%
Eddy's Steel 40@40&5%
Eddy's Metallic 33⅓@33⅓&5%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899 35%
Lufkin's Steel 33⅓@35%
Lufkin's Metallic 30@30&5%

Teeth Harrow—
Steel Harrow Teeth, plain or headed, base per lb 2¼c

Thermometers—
Tin Case 80¢10@30¢10¢5%

Ties, Bale—Steel.
Standard Wire 50¢10¢5%

Ties, Wall—
Cleveland Wire Spring Co.:
Galv. Steel 5-32 x 6½ in. ₱ 1000 $10.00
Galv. Steel 5-32 x 8½ in. ₱ 1000 $11.00
Galv. Steel 5-32 x 11½ in. ₱ 1000 $12.00
Galv. Steel 5-32 x 15½ in. ₱ 1000 $14.00

Tinners' Shears, &c.—
See Shears, Tinners', &c.

Tinware—
Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See Benders and Upsetters, Tire.

Tobacco Cutters—
See Cutters, Tobacco.

Tools—Coopers'—
L. & I. J. White 20@20&5%

Saw—
Atkins' Cross Cut Saw Tools 40%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

Ship—
L. & I. J. White 25%

Transom Lifters—
See Lifters, Transom.

Traps—Fly—
Balloon, Globe or Acme doz. $1.15@1.25; gro. $10.50@11.00
Harper, Champion or Paragon doz. $1.25@1.40; gro. $12.00@13.50

Game—
Oneida Pattern 75¢10¢5@80¢5%
Newhouse 45@45&5%
Hawley & Norton 65&5@65&10%
Victor (Oneida Pattern) 75@75&5%
Star (Blake Pattern) 65&10@70&5%

Mouse and Rat—
Mouse, Wood, Choker, doz. holes 8½@9c
Mouse, Round or Square Wire doz. $0.85@1.00
American Pattern French Rat and Mouse Traps—
No. 1, Detroit Marty Pattern, ₱ doz. $4.50; in ½ gro. lots, ₱ doz. $4.00
No. 2, Detroit Marty Pattern, ₱ doz. $3.25; in ½ gro. lots, ₱ doz. $3.00
Detroit Marty Pattern Mouse, ₱ doz. $2.00; in ½ gro. lots, ₱ doz. $1.75
Diamond Joe Mouse Traps per doz. 60¢
Diamond Joe Rat Traps per doz. $1.00
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, Each $1.12½; ₱ doz. $12.00
No. 3, Rat, ₱ doz. $6.00; case of 50 $5.25 doz.
No. 3½, Rat, ₱ doz. $4.75; case of 72 $4.25 doz.
No. 4, Mouse, ₱ doz. $3.50; case of 72 $3.75 doz.
No. 5, Mouse, ₱ doz. $2.75; case of 150 $2.25
Schuyler's Rat Killer, No. 1, ₱ gr. $30.00; No. 2, ₱ gr. $20.00; Mouse, No. 3, $18.00 50%

Target—
Markle's, each $5.50

Trimmers, Spoke—
Bonney's Nos. 1 and 2 40%

Trowels—
Disston Brick and Pointing 30%
Disston Plastering 25%
Disston "Standard Brand" and Garden Trowels 40%
Never-Break Steel Garden Trowels, gro. $7.00
Peace's Plastering 30%
Rose Brick and Plastering 25&5%
Woodrough & McParlin, Pl'st'ring 25%

Trucks, Warehouse, &c.—
B. & L. Block Co.'s list 50%
Daisy Stove Trucks, Improved pattern ₱ doz. $18.50
Model Stove Trucks ₱ doz. $18.50

Tubs, Wash—

	No. 1	2	3
Galvanized, per doz.	$5.00	5.50	6.00

Galvanized Wash Tubs (S. S. & Co.):

No.	1	2	3	10	20	30
Per doz.	$5.25	6.00	6.75	6.50	7.25	8.00

Twine—
Miscellaneous—

Flax Twine—	BC	B.
No. 9, ¼ and ½-lb. Balls	22c	24c
No. 12, ¼ and ½-lb. balls	18c	20c
No. 18, ¼ and ½-lb. Balls	16c	18c
No. 24, ¼ and ½-lb. Balls	15½c	17½c
No. 36, ¼ and ½-lb. Balls	15c	17c
Chalk Line, Cotton, ½-lb Balls		22@23½c
Cotton Mops, 6, 9, 12 and 15 lb. to doz		7@8c
Cotton Wrapping, 5 Balls to lb according to quality		10¼c@17c
American 2-Ply Hemp, ¼ and ½-lb. Balls		12@13c
American 3 Ply Hemp, 1-lb. Balls		12@13c
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine)		8½c
India 3-Ply Hemp, 1-lb. Balls		8½c
India 3-Ply Hemp, 1¼-lb. Balls		7c
2, 3, 4 and 5-Ply Jute, ½-lb. Balls		9½@10c
Mason Line, Linen, ½-lb. Balls		15c
No. 2½ Mattress, ¼ and ½-lb. Balls		17c
Wool, 3 to 6 ply		5½c

Vises—
Solid Box 50@50&10%
Parallel—
Athol Machine Co.:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Bonney's 40%
Fisher & Norris Double Screw 15&10%
Hollands':
Machinists' 40%
Key-tone 65&5%
Lewis Tool Co 20@30%
Massey's Perfect 15@20%
Massey's:
Clincher 30@40%
Combination, Quick Adj. 40%
Woodworker's 15@20%
Merrill's 20%
Miller's Falls 50&10&10%
Parker's:
Victor 20@25%
Regulars 20@25%
Vulcan's 40@45%
Combination Pipe 55@40%
Prentiss 20@25%
Sargent's 40%
Snediker's X. L. 30@25%
Stephens' 30@95%
Columbian Hdw. Co 40%

Saw Filers—
Bonney's, No. 1, $13; No. 3, $16 50%
Disston's D 3 Clamp and Guide, ₱ doz. $30 35%
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 45&50%

Miscellaneous—
Bignall & Keeler Combination Pipe Vise 60%
Parker's Combination Pipe:
87 Series 60%
187 Series 60&5%
No. 870 40%

Wads—Price Per M.

	Dis. 25&5%
B. E., 11 up	60c
B. E., 9 and 10	70c
B. E., 8	80c
B. E., 7	80c
P. E., 11 up	$1.00
P. E., 9 and 10	1.25
P. E., 8	1.50
P. E., 7	1.50
Ely's B. E., 11 and larger	$1.70@1.75
Ely's P. E., 12 to 20	$3.00@3.25

Wagon Jacks—
See Jacks, Wagon.

Ware, Hollow—
Aluminum—
S. S. & Co. Reduced List 40%
Cast Iron, Hollow—
Stove Hollow Ware:
Ground 65%
Unground 70%
White Enameled Ware:
Maslin Kettles 75¢10¢5@80%
Covered Ware:
Tinned and Turned 40¢10@40&10¢5%
Enameled and Plain 50@50&10¢5%
See also Pots, Glue.
Enameled—
Agate Nickel Steel Ware, list July '99. 33⅓&10%
L. & G. Oval Enameled Ware 65%
Iron Clad Ware 70&10%
Never Break Enameled 50&5@50&10%
Tea Kettles—
Galvanized Tea Kettles:

Inch	6	7	8	9
Each	45c	50c	55c	65c

Steel Hollow Ware.
Avery Spiders & Griddles 65@65&5%
Avery Kettles 60%
Porcelained 50&5@50&10%
Never Break Spiders and Griddles 65&5%
Never Break Kettles 60%
Solid Steel Spiders & Griddles 65&5%
Solid Steel Kettles 60%
Solid Steel Ware, Enameled 50&5%
Washboards—
Solid Zinc: ₱ doz
Crescent, family size, bent frame $3.60
Red Star, family size, stationary protector $3.00
Double Zinc Surface:
Saginaw Globe, family size, stationary protector $2.65
Cable Cross, family size, stationary protector $2.90
Single Zinc Surface:
Naiad, family size, open back perforated $2.40
Saginaw Globe, protector, family size, ventilated back $2.35

Brass Surface:
Brass King, Single Surface, open back $3.00
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.00

Washers—
Leather, Axle—
Solid.....85c@10c@10@85c@10c@10c@10%
Patent.....85c@10@85c@20%
Coil: ⅜ 1 1½ 1¾ *Inch.*
10c 11c 13c 13c *per 100*

Iron or Steel—
Stove bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers....$5.10 4.20 2.90 2.70 2.50
In lots less than one keg add ¼c per lb., 5-lb. boxes add ½c to list.

Cast Washers—
Over ½ inch, barrel lots, per lb.....
1¼@1¾c

Washer Cutters—
See *Cutters, Washer.*

Washing Machines—
See *Machines, Washing.*

Water Coolers—
See *Coolers, Water.*

Wedges—
Oil Finish.....*lb.* 2.90@3.10c

Weights, Sash—
Per ton, f.o.b. factory....$19.00@22.50

Some Foundries make price $1@$2 lower.

Well Buckets, Galvanized
See *Pails, Galvanized.*

Wheels Well—
8-in., $1.55@1.75; 10-in., $1.80@2.10; 12-in., $2.35@2.75; 14-in., $3.75@4.65

Wire and Wire Goods—
Bright and Annealed:
6 to 9.....72½c@5@72½c&10%
10 to 18.....72½c@10@72½c@10c&5%
19 to 26.....75c@10c@2½@75c@10c@7½%
27 to 36.....75c@10c@7½@80c@2½%
Galvanized:
6 to 18.....70@70c&5%
19 to 26.....72½c@5@72½c&10%
27 to 36.....72½c@10@72½c@10c&5%
Coppered:
6 to 9.....70c@5@70c&10%
10 to 18.....70c@10@70c@10c&5%
19 to 26.....75c@7½@75c@10c@2½%
27 to 36.....75c@10@75c@10c&5%
Tinned:
6 to 14.....75@75c@7½%
15 to 18.....72½c@5@75%
19 to 26.....70c@5@70c&5c%
27 to 36.....70@70c&5%
Annealed Wire on Spools..70c&5@70c&10%
Brass and Copper Wire on Spools..
60c@5@90c@10%
Brass, list Feb. 26, '96.....25%
Copper, list Feb. 26, '96.....15%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to £. 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—
List April 1, 1901.....85c@10@ ..%

Wire Cloth and Netting—
Galvanized Wire Netting...35@35c&5%
Painted Screen Cloth per 100 ft....
$1.00@1.10
Light Hardware Grade:
2-18 Mesh, Plain (8c. list) sq. ft..
1¼@1¾c
2-18 Mesh, Galv. (8c. list) sq. ft...
2½@2¾c

Wire, Barb—See *Trade Report.*
Wire Rope—See *Rope, Wire.*
Wrenches—
Agricultural.....70c&10@75c&10%
Case lots.....75c&10%
Acme .....60&10%
Alligator.....70%
Baxter's S.....60&10%
Bull Dog.....70%
Bemis & Call's:
Adjustable S.....35&5%
Adjustable S Pipe.....40%
Brigg's Pattern.....30&10%
Combination Black.....40&5%
Combination Bright.....40%
Cylinder or Gas Pipe.....50%
Extra Heavy.....45%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....55%
Bindley Automatic.....30%
Boardman's.....33⅓%
Coes' Genuine.....40&10&5&5%
Coes' "Mechanics'".....40&10&10&5&5%
Donohue's Engineer.....40&10%
Eagle.....50&10%
Elgin Wrenches.....40%
Elgin Monkey Wrench Pipe Jaws...33⅓%
Gem Pocket.....30%
Hercules.....70%
Knife Handle, Machinists' (W. & B.):
Case lots.....50&10%
Less than case lots.....30&5%
Improved Pipe (W & B.).....60%
Solid Handles, P.S. & W.....50@50&10%
Triumph.....60&10%

Wrought Goods—
Staples, Hooks, &c., list March 17 '99.....90@90c&10%

Yokes Neck—
Covert Saddlery Works, Trimmed.60&5%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—
Fort Madison's Farmers & Freighters'.. list net

Zinc—
Sheet.....*lb* 6¼c@6¾c

PAINTS, OILS AND COLORS—Wholesale Prices.

White Lead, Zinc, &c.
Lead, Foreign white, in Oil.... 7½@ 9¾
Lead, American White, in Oil:
Lots of 500 ℔ or over..... @ 6¼
Lots less than 500 ℔..... @ 7
Lead, White, in oil, 25 ℔ tin pails, add to keg price..... @ ⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price..... @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.. @ 1¼
Lead White, Dry in bbls..... 5¾@ 6
Lead, American. Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry..... ℔ ℔ 4¾@ 4¾
Zinc, Paris, Red Seal, dry..... @ 8½
Zinc, Paris, Green Seal, dry..... @ 9¾
Zinc, Antwerp Red Seal, dry..... @ 6¼
Zinc, Antwerp, Green seal, dry .. @ 7¾
Zinc, V. M. French, in Poppy Oil, Green Seal:
Lots of 1 ton and over.....12 @12¼
Lots of less than 1 ton.....12¼@12¾
Zinc, V. M. French, in Poppy Oil, Red Seal:
Lots of 1 ton and over.....10¾@11¼
Lots of less than 1 ton.....11@11½
Discounts.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors.
Black, Carbon.....℔ ℔ 8 @20
Black, Drop, Amer..... 4 @ 7
Black, Drop, Eng..... 7 @11
Black, Ivory..... 12 @21
Lamp, Com..... 4½@ 6
Blue, Celestial..... ℔ ℔ 4 @ 6
Blue, Chinese.....30 @35
Blue, Prussian.....28 @34
Blue, Ultramarine..... 4 @20
Brown, Spanish..... ¼@ 1
Brown, Vandyke, Amer..... 1¾@ 2½
Brown, Vandyke, Foreign..... 2½@ 3½
Carmine, No. 40.....℔ ℔$2.05@2.75
Green, Chrome, ordinary..... 5 @ 6½
Green, Chrome, pure.....16 @20
Lead, Red, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over..... @ 6
Lots less than 500 ℔..... @ 6½
Litharge, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over..... @ 6
Lots less than 500 ℔..... @ 6½
Ocher, French Washed..... 3 @ 5
Ocher, Dutch Washed..... 4½@ 5
Ocher, American.... ℔ ton $10.00@15.00
Orange Mineral, English..℔ ℔ 8½@11¼
Orange Mineral, French.....11 3-16@11¼
Orange Mineral, German..... 8½@ 9¾
Orange Mineral, American .... 8 @ 8¼
Red, Indian, English..... 4½@ 8½
Red, Indian, American ..... 3 @ 3¼
Red, Turkey, English..... 4 @ 6
Red, Tuscan, English..... 7 @10
Red, Venetian, Amer..℔ 100 ℔. 80@1.75
Red Venetian, English.℔100 ℔ 1.80@3.00
Sienna, Italian, Burnt and Powdered.....℔ ℔ 3½@ 7½
Sienna, Ital., Raw, Powd..... 3½@ 7½
Sienna, American, Raw..... 1½@ 2
Sienna, American, Burnt and Powdered .....℔ ℔ 1½@ 2
Talc, French.... ....℔ 100 ℔ $1.25 @1.50
Talc, American.....90 @1.10
Terra Alba, French, ℔ 100 ℔ . 95 @1.00
Terra Alba, English.....95 @1.00
Terra Alba, American No. 1....85 @85
Terra Alba, American No. 2....45 @50
Umber, Turkey, Bnt. & Pow.℔ ℔ 2½@ 3½
Umber, Turkey, Raw & Powd. 2½@ 3½
Umber, Bnt. Amer..... 1½@ 2
Umber, Raw, Amer..... 1½@ 2
Yellow, Chrome.....10½@25
Vermilion, American Lead.....10 @40
Vermilion, Quicksilver, bulk .. @70
Vermilion, Quicksilver, bags.. @71
Vermilion, English, Import.. .80 @95
Vermilion, Chinese.... ..$1.05@1.20

Colors in Oil.
Black, Lampblack..... 12 @14
Blue, Chinese..... .....36 @40
Blue, Prussian.....32 @36
Blue, Ultramarine.....13 @16
Brown, Vandyke..... 9¼@13
Green, Chrome.....10 @12
Green, Paris..... @24
Sienna, Raw.....10 @13
Sienna, Burnt.....10 @13
Umber, Raw..... 9½@12
Umber, Burnt..... 9½@12

Miscellaneous.
Barytes, Foreign, ℔ ton....$19.00@21.00
Barytes, Amer. floated..... 19.00@20.00
Barytes, Crude, No. 1..... 9.00@10.00
Chalk, in bulk.....℔ ton 2.50@ 2.60
Chalk, in bbls.....℔ 100 ℔ ..@ 35
China Clay, English..℔ ton 12.00@17.50
Cobalt, Oxide.....℔ 100 ℔ 2.20@ 2.50
Whiting, Common.℔ 100 ℔ .40@ .60
Whiting, Gliders..... .45@ .65
Whiting, extra Gliders'.... .55@ .68

Putty.
In bladders $2.35
In bulk..... ....1.25
In cans 1 ℔ to 5 ℔..... .....3.25
In cans 12 ℔ to 25 ℔..... .....2.35

Spirits Turpentine.
In Southern bbls.... .....36½@37
In machine bbls .....37 @37½

Glue.
Cabinet .....11½@16
Extra White.....18 @23
French.....12 @40
Irish.....13½@16
Low Grade.....℔ ℔ 9 @12
Medium White.....14½@16½

Animal, Fish and Vegetable Oils.
Linseed, City, raw.....℔ gal 65@66
Linseed, City, boiled..... 67 @68
Linseed, Scate and West'n, raw.65 @66
Linseed, raw Calcutta see l..... @85
Lard, Prime..... 80 @82
Lard, Extra No. 1..... .....52 @54
Lard, No. 1..... 45 @46
Cotton-seed, Crude..... @ ..
Cotton-seed, Summer Yellow, prime..... 41 @43
Cotton-seed Summer Yellow, off grades..... 38½@39
Sperm, Crude..... @ ..
Sperm, Natural Spring..... 60 @61
Sperm, Bleached Spring..... 63 @65
Sperm, Natural Winter..... 61 @63
Sperm, Bleached Winter..... 66 @68
Tallow, Prime..... 58 @60
Whale, Crude..... @ ..
Whale, Natural Winter..... 44 @46
Whale, Bleached Winter..... 46 @48
Menhaden, Crude, Sound..... 23 @24
Menhaden, Light Strained..... 28 @29
Menhaden, Bleached Winter... 31 @32
Menhaden, Ex Bleached Winter 34 @35
Cocoanut, Ceylon..... @ 6¼
Cocoanut, Cochin..... 14 @16
Cod, Domestic..... 30 @31
Cod, Newfoundland..... 34 @35
Red Elaine..... 36 @38
Red Saponified.....℔ ℔ 6¼@ 6¼
Olive, Italian, bbls..... 58 @ 61
Neatsfoot, prime..... 52 @ 53
Palm, prime, Lagos.....℔ ℔ 5½@ 5¾

Mineral Oils.
Black, 30 gravity, 25@30 cold test.....℔ gal. 9½@ 10¼
Black, 29 gravity, 15 cold test. 10½@ 11½
Black, summer..... 9½@ 9¾
Cylinder, light filtered..... 14½@17½
Cylinder, dark filtered..... 11½@15½
Paraffine, 903-907 gravity..... 12½@13½
Paraffine, 903 gravity..... 11½@11¾
Paraffine, 883 gravity..... 9½@10
Paraffine, red, No. 1..... 12½@13½
In small lots ½¢ advance.

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CURRENT METAL PRICES.

OCTOBER 2, 1901.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ ₩ lb; Square, 0.8¢ ₩ lb

1 to 1⅞ in. round and square	₩ lb 1.85@1.95¢
1⅛ to 4 in. x ⅜ to 1 in.	
Refined Iron:	
1 to 1⅞ in. round and square	₩ lb 1.90@2.00¢
1⅛ to 4 in. x ⅜ to 1 in.	
1⅛ to 4 in. x ¼ to 5-16	₩ lb 2.05@2.15¢
Rods—⅝ and 11-16 round and square	₩ lb 2.25@2.35¢
Angles:	Cts ₩ lb
3 in x ¼ in. and larger	2.30¢
3 to 3½ in. x 3-16 in.	2.30¢
1¼ to 3 in. x ¼ in	2.30¢
1¼ to 2½ in. x 3-16 in and thicker	2.10¢
1 to 1¼ in. x 3-16 in	2.20¢
1 to 1¼ x ⅛ in.	2.30¢
⅛ x ½ in.	2.40¢
¾ x ½ in.	2.50¢
⅝ x ½ in.	3.50¢
¼ x 3-32 in.	4.50¢
Tees:	
1 in	2.80¢
1¼ in.	2.60¢
1½ in. and larger	2.50¢
Beams	2.50¢
Channels, 3 in. and larger	2.50¢
Bands—1½ to 6 x 3-16 to No. 8	₩ lb 2.30¢
"Burden's Best" Iron, base price	₩ lb 3.15¢
Burden's "H. B & S. Iron, base price	₩ lb 2.95¢
"Ulster"	₩ lb 3.60¢
Norway Bars	3.75@4.25¢
Norway Shapes	4.00@4.50¢

Merchant Steel from Store—

	per lb
Bessemer Machinery	1.90 to 1.95¢
Toe Calk, Tire and Sleigh Shoe	2.00@2.50¢
Best Cast Steel, base price in small lots	7½¢
Best Cast Steel Machinery, base price in small lots	8 ¢

Soft Steel Sheets—

¼ inch	2.20¢	No. 14	3.00¢
3-16 inch	2.30¢	No 16	3.20¢
No. 8	2.40¢	No. 18	3.40¢
No. 10	2.60¢	No. 20	3.70¢
No. 12	2.90¢	No. 22	3.80¢

Sheet Iron from Store.

Black.

	One Pass, C. R. Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	₩ lb, 3.80	3.85¢
Nos. 18 to 21	₩ lb, 3.90	3.95¢
Nos. 22 to 24	₩ lb, 4.00	4.05¢
Nos. 25 and 26	₩ lb, 4.10	4.15¢
No. 27	₩ lb, 4.20	4.25¢
No. 28	₩ lb, 4.30	4.35¢

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ lb 11@11½¢
Patent Planished	₩ lb A, 12¢; B, 11¢, net.

Galvanized.

	B. B.	
Nos. 10 to 16	₩ lb, 12¢	60 & 5 off
Nos. 17 to 21	₩ lb, 13¢	
Nos. 22 to 24	₩ lb, 14¢	
Nos. 25 to 26	₩ lb, 15¢	
No. 27	₩ lb, 16¢	
No. 28	₩ lb, 17¢	
No. 29	₩ lb, 19¢	
No. 30	₩ lb, 21¢	

36 in. 1¢ ₩ lb higher.

Foreign Steel from Store—

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 18 @ 20 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 13 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12 ¢
R. Mushet's "Special"	₩ lb 46 ¢
" " " Annealed	₩ lb 75 ¢
" " "Titanic"	₩ lb 19 ¢
Hobson's Choice XX Extra Best	₩ lb 35 ¢
Jessop Self Hardening	₩ lb 45 ¢
Seamans' "Nelson" Steel	40 ¢
Hobson's "Soho" Special Self-Hardening	₩ lb 43 ¢

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free.	Per lb
Banca, Pigs	26 @26¼¢
Straits, Pigs	25¾@26 ¢
Straits in Bars	26½@26¾¢

Tin Plates—

American Charcoal Plates.

Calland Grade:	
IC, 14 x 20	$7.75
IX, 14 x 20	9.25
Melyn Grade:	
IC, 14 x 20	7.25
IX, 14 x 20	8.75
Allaway Grade:	
IC, 14 x 20	6.75
IX, 14 x 20	7.85

American Coke Plates—Bessemer—

IC, 14 x 20 ..... 108 lb	$7.0 @7.15
IX, 14 x 20	$7.50@7.75

American Terne Plates—

IC, 20 x 28	$11.75@12.00
IX, 20 x 28	13.75@14.00

Tin Boiler Plates, American—

IXX, 14 x 28 ..... 112 sheets	$16.00
IXX, 14 x 28 ..... 112 sheets	17.00
IXX, 14 x 31 ..... 112 sheets	18.50

Copper—

DUTY: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₩ lb.

Ingot—

Lake	17¼@17½¢
Ansonia grade Casting	16¾@17 ¢

Sheet and Bolt—

January 19, 1900. Net.

Prices, in cents per pound. Sheet 30 x 60.

Not wider than	Not longer than	And longer than	64 oz. & over, 30 lb. sheet, 30 x 60 and heavier.	32 oz. to 64 oz., 25 to 30 lb.	24 oz. to 32 oz., 18¾ to 25 lb.	16 oz. to 24 oz., 12½ to 18¾ lb.	14 oz. and 15 oz., 11 to 12½ lb.	12 oz. and 13 oz., 9½ to 11 lb.	10 oz. and 11 oz., 7¾ to 9½ lb.	8 oz. and 9 oz., 6¾ to 7¾ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72	.....	21	21	21	21	22	23	24	27	30
30	96	72	21	21	21	21	22	24	27	30	
30	.....	96	21	21	21	21	23	27			
36	72	.....	21	21	21	21	23	25	28	31	
36	96	72	21	21	21	23	23	27	30		
36	120	96	21	21	21	23	24				
36	.....	120	21	21	22	23					
48	72	.....	21	21	22	23	25	28	32		
48	96	72	21	21	22	24	26	29			
48	120	96	21	21	23	25	29				
48	.....	120	21	22	24	27					
60	72	.....	21	22	23	24	27	32			
60	96	72	21	21	23	25	30				
60	120	96	21	22	24	27					
60	.....	120	21	23	25	29					
72	96	.....	21	22	24	29					
72	144	96	21	23	26	31					
72	.....	144	22	24	29						
108	120	.....	22	24	30						
108	.....	120	24	25							
Wider than 108	144	.....	25	27							
	.....	144	26	29							

Rolled Round Copper, ⅛ inch diameter and over, ₩ lb 2¢.

Circles, Segments and Pattern Sheets, 3¢ ₩ lb advance over price of sheet Copper required to cut them from.

Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 oz. ₩ square foot, 2¢ ₩ lb over the foregoing prices.

All Polished Copper, 20 in. wide and under, 1¢ ₩ lb advance over the price for Cold Rolled Copper.

All Polished Copper, over 20 in. wide, 2¢ ₩ lb advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₩ lb more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₩ lb	25¢
12 oz. and up to 14 oz. to square foot, ₩ lb	26¢
10 oz. and up to 12 oz., ₩ lb	24¢
Lighter than 10 oz., ₩ lb	31¢

Circles less than 8 in. diameter, 2¢ ₩ lb additional.

Circles over 13 in. diameter are not classed as Copper Bottoms.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.

List March 2, 1901.

Nos.	0000 to 8 Base	9 and 10	11 and 12
		½¢	¾¢ ₩ lb adv.
Nos.	13	14	15 16
	¾¢	⅞¢	1¢ 1⅛¢ ₩ lb adv.
Nos.	17	18	19 20
	1½¢	2¢	2½¢ 2¾¢ ₩ lb adv.

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.

Feb. 6, 1899. Net. Outside Diameter.

Stubs' W. G.	B. & S. W. G.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-11	3- 9	...	.....	...	.....	33	31	30	29	28	27	25	24
12	10	...	.....	37	35	33	31	30	29	28	27	25	24
13	11	...	.....	37	35	33	31	30	29	28	27	25	24
14	12	...	41	37	35	33	31	30	29	28	27	25	24
15	13	...	42	38	36	33	32	31	30	30	28	26	25
16	14	...	43	39	37	34	33	32	31	30	29	26	25
17	15	...	44	41	38	35	34	33	32	31	30	27	26
18	16	61	45	42	39	36	35	34	33	31	30	28	27
19	17	62	47	43	40	37	36	35	34	33	32	30	29
20	18-19	64	49	44	41	39	38	37	36	35	34	32	31
21	20	66	51	46	43	41	40	39	38	37	36	35	34
22	21	71	56	48	44	42	41	40	39	38	37	37	36
23	22	76	61	50	46	44	43	43	41	40	39	39	39
24	23	81	66	53	48	46	45	44	43	41	40	40	41
25	24	86	72	56	51	49	47	46	45	43	43	44	45

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
86	82	20	27	21	21	21	21	21	21	21	23	23	25	27	28¢₩lb

Copper, Bronze or Gilding Tubes, 3¢ ₩ lb additional

Brazed Brass Tubing.

(*To No. 19, inclusive.*) Feb. 26 1896

Brown & Sharpe's gauge standard.

	Per lb.
Plain Round Tube, ¾ in. up to 2 in.	$0.35
" " ⅞ " ¾ "	.36
" " 1 " ⅞ "	.38
" " 1⅛ " 1 "	.41
" " 5-16 " ⅛ "	.48
" " ¼ " 5-16 "	.65
" " 3-16 " ¼ "	1.00
" " ⅛ " 3-16 "	1.50
Smaller than ¼ inch	Special
3 inch and larger	.40
Over 3 inch to 3½ inch, inclusive	.45
Over 3½ inch	.50

Bronze and Copper, advance on Brass List, 3 cents.

Discount from list % 35%

Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

Common High Brass	in.	in.	in.	in.	in.	in.	in.	in.	in.
Wider than and including	2 12	12 14	14 16	16 18	18 20	20 22	22 24	24 26	
To No. 20 inclusive	.22	.23	.25	.27	.29	.31	.33	.36	
Nos. 21 22, 23 and 24	.22	.24	.26	.28	.30	.32	.34	.37	
Nos. 25 and 26	.23	.24½	.27	.29	.31	.33	.35	.38	
Nos. 27 and 28	.23	.25	.28	.30	.32	.34	.36	.39	

Common High Brass	in.	in.	in.	in.	in.	in.	in.	in.
Wider than and including	26 28	28 30	30 32	32 34	34 36	36 38	38 40	
To No. 20, inclusive	.39	.42	.46	.50	.55	.60	.65	*
Nos. 21, 22, 23 and 24	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28	.42	.45	.49	.53	.58	.65	.75	

* Special prices not less than 80 cents.

Add ½¢ ₩ lb additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List..... 20%

Wire in Coils. List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gild'g bronze and copper
All Nos. to No. 10, inclusive	$0.23	$0.27	$0.28
Above No. 10 to No. 16	.23½	.27½	.28½
No. 17 and No. 18	.24	.28	.29
No. 19 and No. 20	.25	.29	.30
No. 21	.26	.30	.34
No. 22	.27	.31	.35
No. 23	.28	.32	.36
No. 24	.30	.34	.38
No. 25	.32	.36	.40
No. 26	.35	.39	.43
No. 27	.38	.42	.46
No. 28	.42	.46	.51
No. 29	.45	.49	.54
No. 30	.48	.52	.57
No. 31	.51	.55	.67
No. 32	.55	.59	.76
No. 33	.59	.63	.89
No. 34	.64	.68	.95
No. 35	.70	.74	1.30
No. 36	.76	.80	1.50
No. 37	1.00	1.04	1.70
No. 38	1.30	1.34	2.00
No. 39	2.00	2.00	3.25
No. 40	2.60	2.60	5.75

Discount, Brass Wire, 20%; Copper Wire, NET.
List November 16, '96.

Spring Wire, 2¢ ₩ lb advance.

Tobin Bronze—

Straight, but not turned, Rods, ⅝ to 3 in. diameter, ₩ lb, net..... 20¢

Finished Piston Rods, ⅝ to 2½ in. diameter, ₩ lb net..... 21¢

Other sizes and extreme lengths, special prices.

Spelter—

Duty: In Blocks or Pigs, 1¢ ₩ lb

Western Spelter..... 4.45@4.60

Zinc.

Duty: Sheet, 3¢ ₩ lb.

600 lb casks..... Per lb..... 7¼¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American Pig	4.60@4.62½¢	
Bar	5¼@5½¢	
Pipe	6½c	20% off
Tin Lined Pipe	13½¢	20% off
Block Tin Pipe	40 ¢	20% off
Sheet Lead, full rolls	7¼¢	20% off
Sheet Lead, cut	7¾¢	20% off

Old Lead in exchange, 4½¢ ₩ lb.

Solder.

½ & ¼ guaranteed	18 @18½¢
No. 1	14 @16½¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₩ lb.

Cookson	₩ lb 10½@11¢
Hallett's	₩ lb 8½@9½¢
U. S.	₩ lb 8½@9 ¢

Aluminum—

Duty: Crude, 8¢ ₩ lb. Plates, Sheets, Bars and Rods, 13¢ ₩ lb.

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:

Small lots	₩ lb 37¢
100-lb lots	₩ lb 35¢

No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:

Small lots	₩ lb 34¢
100-lb lots	₩ lb 32¢

Aluminum Sheet, B. & S. gauge. 50 lb or more

Wider than	6-in.	14-in.	24-in.	30-in.
And including	14-in.	24-in.	30-in.	
	₩ lb.	₩ lb.	₩ lb.	₩ lb.
Nos. 13 to 19	$0.42	$0.44	$0.46	$0.47
No. 20	.44	.46	.48	.49
Nos. 21 to 23	.46	.48	.50	.51
No. 24	.46	.50	.52	.53
No. 25	.47	.51	.53	.54
No. 26	.47	.54	.55	.56
No. 27	.48	.57	.58	.59
No. 28	.48	.57	.60	.61
No. 29	.49	.60	.62	.63
No. 30	.50	.64	.65	.67

Note.—Lots of less than 50 lb 5¢ ₩ lb extra.

Aluminum Wire, B. & S. Gauge.

Larger than No. 9 ₩ lb 40¢	No. 15 ₩ lb 42¢
No. 9 to No. 10 ₩ lb 40½¢	No. 17 ₩ lb 43¢
No. 11 ₩ lb 41 ¢	No. 18 ₩ lb 43½¢
No. 12 ₩ lb 41½¢	No. 19 ₩ lb 44¢
No. 13 ₩ lb 42 ¢	No. 20 ₩ lb 44½¢
No 14 ₩ lb 42½¢	No. 21 ₩ lb 45¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper	₩ lb 14½¢
Light and Tinned Copper	₩ lb 13½¢
Heavy Brass	₩ lb 7 ¢
Light Brass	₩ lb 7¼¢
Lead	₩ lb 4 ¢
Tea Lead	₩ lb 3½¢
Zinc	₩ lb 3½¢
No. 1 Pewter	₩ lb 21¢
No. 2 Pewter	₩ lb 19¢
Tin Plate Scrap	₩ ton $12.00
Wrought Scrap Iron	₩ gross ton $10.00@11.00
Heavy Cast Scrap	₩ gross ton $10.00@11.00
Stove Plate Scrap	₩ gross ton $8.00@8.50
Burnt Iron	₩ gross ton $8.00@8.50